N.A.C.A. BULLETIN

March 1957

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ABOUT THIS MONTH'S AUTHORS

J. M. EMERY and W. B. WALKER
Administration of the Controller's Organization. Mr. Emery is Assistant to the Controller, and Mr. Walker is Assistant Controller, of Columbus and Southern Ohio Electric Company, Columbus, Ohio. Formerly each was Senior Accountant with Arthur Andersen & Co. They are members of the *Columbus Chapter*, of which Mr. Emery is currently Publicity Director.

LEONARD W. MILLER and GEORGE R. KNIGHT
Applying Accounting and Engineering Skills for Better Controls. Mr. Miller is a Managing Consultant and Mr. Knight a Consultant in the Management Services Dept. of Arthur Young & Company. Mr. Miller was previously a Senior Auditor, Hughes Aircraft Co., Culver City, Calif. Formerly Mr. Knight was Supervisor of Industrial Engineering in the Parts Div., Sylvania Electric Products, Inc.

HENRY RASCH
A Better Product Mix Recipe Through Direct Costing. Mr. Rasch is Chief Accountant, Charmin Paper Mills, Green Bay, Wisconsin. His experience within this company includes cost accounting, budgets, general accounting and special studies assignments. Mr. Rasch is a Past President of *Northern Wisconsin Chapter*.

ROBERT R. TASTOR
A Reliable Operation Report in 24 Hours. Mr. Tastor is Chief Accountant, International Heater Co., Utica, New York. He has been affiliated with this company since 1947. With this article he makes his initial appearance as a *Bulletin* contributor. Mr. Tastor is a Past Director of *Mohawk Valley Chapter*.

ALBERT F. HACKETT
Telling Mr. Brown What He Wants to Know. Mr. Hackett is Controller and Office Manager, C. J. Bates & Son, Chester, Conn. Previously he served as Plant Accountant, Metals Division, Olin-Mathieson Chemical Corp., New Haven, Conn. Mr. Hackett is a member of *New Haven Chapter*.

CHARLES M. BOWEN
Time Control Program for Installation Contracts. Mr. Bowen is Manager, Budgetary Control Section, Industrial Div., York Div., Borg-Warner Corp., York, Penna. He has been affiliated with this company since 1941 in both the district and home offices. Mr. Bowen is the current President of *York Chapter*.

H. E. METCALF
Factors To Be Considered in Designing a Production Control System. Mr. Metcalf is a Senior Member of the Management Consulting Staff, Scovell, Wellington & Co., Springfield, Mass. He has been associated with this firm for the past sixteen years. Mr. Metcalf is a member of *Springfield Chapter*.

KENNARD WEBSTER and C. G. UFFELMAN
Cost Reporting in an Advertising Agency. Mr. Webster is a Partner, Jackson & Zaenglein, Rochester, N. Y. Mr. Uffelman is Assistant Treasurer of Charles L. Rumrill & Co., Inc., Rochester, N. Y. A specialist in systems work, Mr. Webster has been with his firm for nine years. Mr. Uffelman has been affiliated with his present company since 1951.

MARVIN TODD
Cost Reporting for a Poultry Enterprise. Mr. Todd is General Cost Accountant, Maine Broilers, Inc., Brunswick, Maine. Prior to this affiliation in 1953, he had served with Rockford Screw Products Co., Van Denberg Supply Co., and the Earl Brander Enterprises, all of Rockford, Illinois.

J. E. LACENSKI
Consigned Stock Inventory and Activity Control Procedure. Mr. Lacenski is a Member of the Controller's Staff, Bucyrus-Erie Co., South Milwaukee, Wisconsin. He joined this company as an Internal Auditor in 1953 and assumed his current duties in 1955. Mr. Lacenski is a member of *Milwaukee Chapter*.

GEORGE A. POWER
Many Items Make More Inventory. Mr. Power is Supervisor of Stores Accounting, Apparatus and Optical Division, Eastman Kodak Co., Rochester, New York. He has been affiliated with this company since 1948. This is Mr. Power's second contribution to the *Bulletin*. He is a member of *Rochester Chapter*.

BENJAMIN S. ABRAMS
A One-Card Timekeeping System. Mr. Abrams is a Systems Designer, Electric Boat Division, General Dynamics Corp., Groton, Conn. He was formerly engaged for several years in a similar capacity with Kaiser Metal Products, Inc., Bristol, Pa. Mr. Abrams is a member of *Norwich Chapter*.

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N.A.C.A. BULLETIN

VOL. XXXVIII, No. 7 MARCH, 1957

Administration of the Controller's Organization

by

J. M. EMERY and W. B. WALKER

Assistant to the Controller
Columbus and Southern Ohio Electric Company
Columbus, Ohio

Assistant Controller
Columbus and Southern Ohio Electric Company
Columbus, Ohio

In this public utility company, the controller and his staff are well-organized for the internal functioning of their department and are also organized to provide, largely through an effective conference schdeule, consultive services to management throughout the company. Work and reports are likewise carefully scheduled and overall operation of the controller's organization is governed by a prepared manual, methodically kept up to date.

OUR BUSINESS is the production, transmission and distribution of electric energy to all who request it in the company service area. Tremendous expansion typical of the industry has occurred in the company, particularly since the end of World War II. The most important change is in the plant account, in which dollar investment has more than tripled since the war years to over $182 million at the end of 1955. Closely related to plant growth are increases in energy sales and electric revenues. Despite technical operating improvements and simplification and mechanization of office procedures, the rapid expansion has required many more people. The effects on administration, accounting and related functions are almost too obvious to mention. In this respect our business is no different from a manufacturing, retailing or other commercial organization. To explain how some of the problems have been resolved within the controller's organization is our purpose.

Defining — And Assigning — Responsibility and Authority

Shortly after the company became independent of previous holding company affiliations (1946), the treasurer and controller functions were separated. The corporate code of regulations was amended to define the office, duties and responsibilities of the controller as follows:

> "The Controller shall be the chief accounting officer of the Corporation, responsible to the Board of Directors. He shall maintain adequate books of account and supporting accounting records for the purpose of recording the assets, liabilities and operations of the corporation; shall formulate and maintain accounting policies which conform with generally accepted principles of accounting; shall develop and maintain an adequate system of internal check and control designed to safeguard the Company's assets; shall prepare financial statements of the Corporation, inclusive of those required by the laws of Ohio to be laid before the shareholders of the Corporation; and may be required by the Board of Directors to attend meetings of the Board of Directors prepared to report concerning the foregoing matters. The Controller shall have such other powers and perform such other duties as are assigned to or vested in him by the Board of Directors or the Executive Committee."

The duties of the controller had been defined and the job was now one of organizing to perform these duties. The broad outlines of this development can be stated briefly. First we took the "textbook" approach and a theoretical controller's organization chart was prepared. Then the aptitudes, special qualifications and interests of various members of the staff were considered and an initial organization chart was issued. With necessary rearrangements from time to time, the present organization was developed. It is surprising how close the final product approaches the theoretical organization chart. The controller's organization, with approximately 230 people, now includes four departments, each divided into one or more divisions headed by a supervisor. The divisions of each department and its specific functions are shown in Exhibit 1.

During the period of transition the controller's functions, set forth above, were defined in more detail. Responsibilities and authorities of department heads were also reduced to writing. Subsequently, written statements of responsibility and authority were prepared for supervisors and section and group leaders. These written statements were broad in scope but clarified most detail problems and questions regarding who performs the several functions. In defining responsibilities and authority for the various positions, special emphasis was placed on:

1. **Review and approval of significant matters by the next higher level of supervision.**
2. **Making decisions at the lowest reasonable level.**
3. **Management by exception.**

After defining responsibility and authority, it was necessary to reassign certain functions as a matter of practical operation. Previous assignment of func-

EXHIBIT 1

tion had been made on the basis of individual qualification or available time. Activity on a larger scale required more logical placement of functions. We believe that this is a key to efficient administration. It will be noted from Exhibit 1 that the accounting line and staff functions are definitely separated and that all line accounting functions are the responsibility of one department head.

In regard to authority and delegation, each department head and division supervisor, within his department or division, may:

1. Delegate appropriate portions of responsibility.
2. Establish organization structure.
3. Appoint employees to or hire personnel for positions under his jurisdiction.
4. Recommend salary changes and approve promotion, demotion, and the release of personnel.
5. Administer all other personnel matters including approval of such items as vacations, expense accounts, and job position descriptions.
6. Prepare and administer annual operating and equipment budgets.

Communications and Control Through Conferences and Correspondence

We make considerable use of meetings for several important purposes. A number of regularly scheduled meetings are held and they have proved to be a vital communication tool, perhaps the backbone of our administrative system. Each meeting is planned in advance and conducted on an informal but businesslike basis. First, there is a committee on accounting policy. This group is made up of six individuals including the controller and all department heads. They meet every Monday morning at ten o'clock for a period lasting from thirty minutes to two hours. An administrative assistant also sits in on these meetings and performs the duties of secretary. The agenda begins with a brief report by each individual of the significant activities during the past week within his department or area of responsibility. Also, any matters of general interest during the coming week are reported. Particular problems of administration, policy, and accounting are discussed. Relationships with other groups in the company organization, and interpretation of company policies as they may affect the controller's organization are considered. Specific problems or questions to be considered are submitted in writing to all members on or before noon of the preceding Friday. A record is made in the minutes of all decisions and actions taken and a list is prepared monthly by the secretary of all open matters from past meetings, requiring a decision or some action. It is amazing what a subtle but effective persuader this list can be to all concerned.

For the purpose of discussing problems principally applicable to specific departments, a weekly individual meeting of one hour duration (or less) is held between the controller and each department head. More detailed and specific matters are considered by the two at this time and each department head prepares brief notes for consolidation into a weekly summary, copies of which are furnished to all department heads. At that level, in order to communicate

more directly and effectively with the division supervisors, each department head has at least one regularly scheduled meeting with each of his supervisors during the week. At this time, he relates the results of any decision or action taken by the committee on accounting policy or agreed to in his meeting with the controller, which may affect the particular supervisor or his division. Likewise, the supervisor is afforded a regular opportunity to discuss with his department head any problem or question regarding the division operations. Except for emergencies or other unusual circumstances, all operating matters and problems are held for discussion and clearance at this time. Minutes are optional with the department head and supervisor involved.

It might seem that a great deal of time would be consumed with such meetings. On the contrary, we believe that the elimination of interruptions in daily work, as a result of scheduling these conferences at a set time for a limited period, is a tremendous time-saver. And, as a result, there is a definite tendency by personnel at all levels of supervision to make more decisions, to better plan and schedule their work, and thus to operate more effectively as members of the management team.

In addition to strictly business meetings once a month, except in the summer, there is an evening get-together of all division supervisors, department heads, and the controller. This is a combined social gathering and dinner, followed by a general discussion program related to business. By way of illustration, the topics of several of these meetings were as follows:

1. The director of rates and valuation explained his department's organization and functions and answered questions on the subject
2. A round table discussion on "The Supervisor's Role in Management" was held
3. A Christmas party, including all the "bosses" (wives), was held most successfully
4. A presentation on "Electronics for the Office" was made by several members of the group, with most of the company officers in attendance as guests.

The foregoing paragraphs give some idea of the scope and variety of communications effected through the use of meetings and conferences. Periodic meetings are also held with the chief clerks of our several district offices because of the controller's functional responsibility and authority over many of their operations. Here again, minutes are prepared and great strides have been made in the past year in training and communicating with these individuals.

Another important element in communications, whether within the controller's organization, to top management, or to subordinates and other divisions and departments, is correspondence. When the first controller's organization chart was issued, few specific ground rules were in effect and, generally speaking, supervisors signed all correspondence regardless of its nature. As the organiza-

tion structure was being clarified, authority to sign correspondence leaving the controller's organization was generally delegated only to department heads. In order to learn what type of correspondence was leaving the organization, information copies (containing a diagonal red line) were required, regardless of who signed them. These copies were reviewed up the line of supervision and provided information useful in improving control over operations. As revised lines of authority and responsibility were set up, the present policy on correspondence came into being. Today all routine correspondence may be signed by division supervisors and "red line" copies are routed up the line of supervision. In this way, with very little time involved, the administrative personnel are informed of what is going on within the organization. To keep personnel both within and outside the controller's organization informed, the controller's manual contains a complete procedure which outlines the routing of correspondence both from and to the controller's organization.

Controller's Manual; Work Scheduling and Reports

As functional responsibilities were established, a need was recognized to consolidate, integrate and control existing instructions and procedures, which heretofore had been issued in the form of memoranda. Thus, a controller's manual was established, containing information primarily for the guidance of supervisors and employees of the controller's organization. Because of its acceptance and use, it is now distributed to all other departments of the company. The manual contains complete explanation of the organization and functions of the various departments and divisions of the controller's organization, the company chart of accounts, certain general and administratvie procedures, and general procedures and instructions applicable to the several accounting areas. Although preparation and maintenance is a joint function, the indexing, approval, preparation and distribution of material has been assigned to the methods division to achieve uniformity and maintain control. The originating supervisor or department head is responsible for content and designates the required approval and distribution. An illustration of our distribution and approval sheet, which is prepared for each index number each time it is revised, is shown in Exhibit 2.

All material in the manual is reviewed at least annually and an accurate and up-to-date record of distribution is maintained at all times. It is this control, coupled with careful preparation and editing of "not too detailed" procedures and instructions and the use of illustrative examples wherever possible, that has made the manual so useful. It should be noted also, that several divisions of the controller's organization have prepared more detailed manuals

APPROVAL AND DISTRIBUTION OF MANUAL MATERIAL

(For Use Of Methods Division Only)

Section	Chapter	Subject	Index
			5. 4. 10
Procedures	General Accounting	Billing for Work Done for Others	Effective Date Rev. 7-1-56/(JME)
			Date Of Distribution 8-17-56/JB

DISTRIBUTION

	Previous	New	Extra (List Names and Number of Copies) Previous	New
☐	SDL* #1 - Officers and other Administrative Personnel	☐	J. L. McNeeley - 1	
X	SDL #2 - Commercial Operations	X	Stan Kaufman - 1	
X	SDL #3 - Operating Departments (Except Southern Dist)	X	F. Campbell - 7	Same as Previous
X	SDL #4 - Other Departments	X	N. Patton - 6	
X	SDL #5 - Controller's Organization	X	Transmission - 1	
X	SDL #6 - Southern District	X	Internal Audit - 5 8/30/56	

ROUTING FOR APPROVAL

To	Name	Signature	Date	To	Supervisors of	Signature	Date
ⓐ	Walker Arnold	(W. B. Walker)	8-10	ⓔ	Gen. and Payroll Acctg.	(A. R. Grady)	8/6/56
ⓒ	Morris	(Robert J. Morris)	8-10	ⓕ	Plant Accounting	(P. A. Bollinger)	8/7/56
ⓑ	Emery Heimann La Fratta	(J. M. Emery)	8-13	ⓖ	Stores Accounting Customers Accounting Machine Tabulating Meter Reading Office Services Analytical	(A. B. Dwyer)	8/9/56
				ⓘ	Internal Auditing Methods	(E. W. Harsh)	8/9/56

* Abbreviation "SDL" refers to Standard Distribution Lists.

EXHIBIT 2

of instruction and procedure applicable to their own operations. These manuals are prepared and maintained solely within each division, although, in many instances, they make direct reference to and supplement the contents of the overall controller's manual.

We believe that all of the topics discussed up to this point—organization, meetings, correspondence and the manual—fall into the dual category of communication and control. The next (and last) topic is no exception as scheduling of accounting work is one of our primary means of control and reports are our main line of communication to management. After much experimenting, a very detailed monthly closing and report schedule, based on elapsed time in working days was developed. We can use the same schedule each month by merely inserting the schedule and actual calendar dates. This closing schedule, exemplified in Exhibit 3, is supported by a number of additional work schedules. Our meter reading is operated on a twenty-one day cycle. This schedule is important because it permits us to control and regulate the flow of work to the cen-

MONTHLY CLOSING AND REPORT SCHEDULE (SAMPLE PAGE)

PAGE 7.

Item	Journal Voucher Number	Division		Calendar Date		Hour		Comments
		From	To	Sched.	Actual	Sched.	Actual	
FOURTH WORKING DAY (Cont'd)								
11. Mechanically prepared journal vouchers - overheads applied to construction orders.(1)	2	Tabulating	General			4		
	3	Tabulating	General			4		
	2	General	Plant			4		
	3	General	Plant			4		
12. Summary of miscellaneous customer accounting entries.	-	Customer	General			4		
13. Revenue analysis - Southern District.	-	Tabulating	Customer			4		
14. Report of current used by Company - Southern District.	-	Customer	General			4		
15. Summary of interest charged to construction.	1	Tabulating	General			4		
16. Summary of heat revenues.	11	Tabulating	General			4		
17. Summary of current used by Company - Columbus District.	24	Tabulating	General			4		
18. Mechanically prepared journal voucher to distribute transportation expense	57	Tabulating	General			4		
	59	Tabulating	General			4		
	57	General	Stores			4		
	59	General	Stores			4		
FIFTH WORKING DAY								
1. Completed duplicating master cards for last semimonthly payroll	-	General	Tabulating			9		
2. Revenue analysis - Southern District.	-	Customer	General			9		
3. Summary of cash receipts and disbursements.	16	Tabulating	General			9		
4. Form A-1 for electric current used by Company.	35	General	Tabulating			9		
5. Summary of material transfers.	45	Tabulating	General			9		
	45	General	Stores			9		

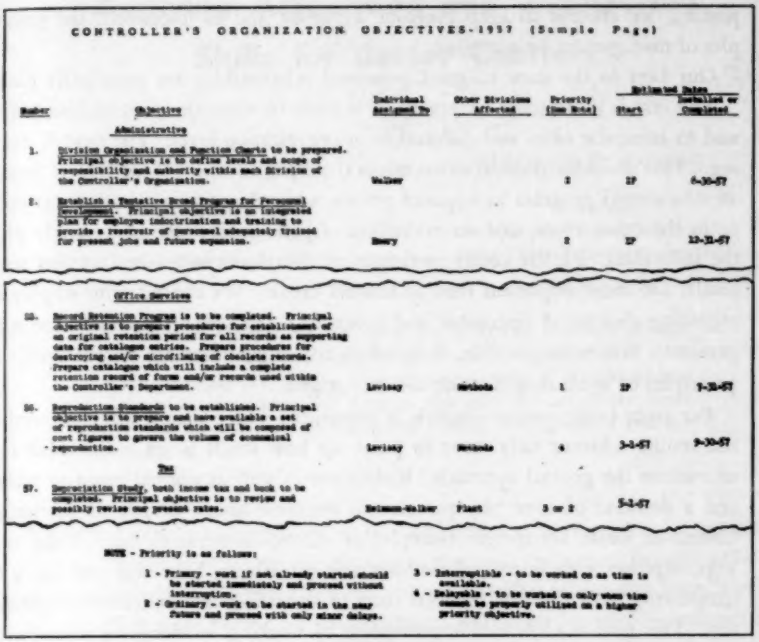
(1) For closing months only - March, June, September, December.

EXHIBIT 3

tral billing office, thus eliminating work peaks. Likewise, due dates for payroll time reports are established at the beginning of each year and distribtued to supervisory personnel throughout the company.

Actual performance is recorded on the closing schedule each month, and is posted to a summary schedule containing a column for each month of the year. Administrative review of the summary quickly reveals where changes in schedule dates and times can be made to improve operations and speed up reports. All of this detail leads to the goal of prompt and useful reports to management. In addition to flash reports of revenue and other pertinent financial data, a series of unit reports is prepared for each unit of company organization. These reports show labor, stores material, and other expenses for the particular unit only. Functional totals are summarized for each major group in the company organization. Financial reporting is thus geared to the organization structure and cost variations can readily be traced to responsible individuals.

Besides the routine day-to-day operations, there always seem to be many special problems or projects which should be tackled but for which no one can find time. This dilemma confronted us. Everyone tried to work on everything at the same time. Results, instead of being creative, were chaotic. An attempt was made to establish a detailed project control system but that was too complicated. Finally, a simple objective list was developed and it has been most help-



CONTROLLER'S ORGANIZATION OBJECTIVES-1957 (Sample Page)

Number	Objective	Individual Assigned To	Other Divisions Affected	Priority (See Note)	Estimated Dates Started	Estimated Dates Installed or Completed
	Administrative					
1.	Division Organization and Function Charts to be prepared. Principal objective is to define levels and scope of responsibility and authority within each division of the Controller's Organization.	Walker		2	2/	6-30-57
2.	Establish a Tentative Broad Program for Personnel Development. Principal objective is an integrated plan for employee indoctrination and training to provide a reservoir of personnel adequately trained for present jobs and future expansion.	Emery		2	2/	12-31-57
	Office Services					
55.	Record Retention Program is to be completed. Principal objective is to prepare procedures for establishment of an original retention period for all records as supporting data for catalogue entries. Prepare procedures for destroying and/or microfilming of obsolete records. Prepare catalogue which will include a complete retention record of forms and/or records used within the Controller's Department.	Levisay	Methods	1	2/	9-30-57
56.	Reproduction Standards to be established. Principal objective is to prepare and have available a set of reproduction standards which will be composed of cost figures to govern the volume of economical reproduction.	Levisay	Methods	4	3-1-57	9-30-57
	Tax					
57.	Depreciation Study, both income tax and book to be completed. Principal objective is to review and possibly revise our present rates.	Heimann-Walker	Plant	3 or 2	5-1-57	

NOTE - Priority is as follows:

1 - Primary - work if not already started should be started immediately and proceed without interruption.
2 - Ordinary - work to be started in the near future and proceed with only minor delays.
3 - Interruptible - to be worked on as time is available.
4 - Delayable - to be worked on only when time cannot be properly utilized on a higher priority objective.

EXHIBIT 4

ful in getting people to work on "first things first." A sample page from this list—which includes a brief description of each objective, individual assignments, priority, and estimated starting and completion dates—is shown in Exhibit 4. In one year, over half of the listed projects were completed, a far better record than we dared to anticipate, and many more were in progress.

Results Are Achieved Through People

Very briefly we have tried to explain in this article the status of the controller in our company, the structure and functions of his organization, and the general system of delegation, communication and control. No matter how useful or effective these techniques may seem, we are ever mindful that our major concern is with people. To the extent that we can win the confidence, cooperation, respect and friendship of customers and fellow employees, the desired results will be achieved. Toward this end we have attempted to spell out for people exactly what is expected of them. Then, through meetings and accompanying minutes, correspondence procedures, a manual, precise scheduling and improved re-

porting, we attempt to keep everyone informed and to implement the principles of management by exception.

Our keys to the door of good personnel relationships are principally three. The first is informality. Every effort is made to maintain an open-door policy and to minimize titles and differences in organization level. The next is training. This includes indoctrination of new people to make them feel at home, an educational program to acquaint people with what goes on at the next desk or in the other room, and an evaluation of performance discused frankly with the individual. Finally comes participation. Emphasis is on the fact that team results are more important than individual credit. We consult with employees regarding changes in operations and procedures and solicit their ideas and suggestions. Whenever possible, these ideas and suggestions are adopted and the principles of work simplification are encouraged.

Far from being perfect—which is impossible where people are concerned—the results achieved only serve to point up how much is yet to be done and to confirm the general approach. Reductions in staff as normal turnover occurs and a decrease of over fifty per cent in overtime hours, despite an increasing volume of work, are specific examples of accomplishments to date. These savings, together with improved methods and procedures, have also enabled us to temporarily hold the line on total costs of operating the controller's organization. Our goal is continued improvement of working relationships among people in the organization, better and more timely reports and other information for management, and improved service to the most important people in our collective business lives—our customers.

Applying Accounting *and* Engineering Skills for Better Controls

by

LEONARD W. MILLER and GEORGE R. KNIGHT

Managing Consultant
Management Sevices Department
Arthur Young & Company, Los Angeles

Consultant
Management Services Department,
Arthur Young & Company, New York

Using as an example the setting of useful control standards for material and labor against a background of small or medium-sized company operation, the authors contrast the attitudes of accountant and engineer in these areas and discover that each can contribute something to the other to provide better control through more realistic information.

MANAGEMENT'S RECOGNITION of control systems as prerequisites for business success has contributed significantly to the rapid and almost parallel growth of the industrial accounting and industrial engineering professions since World War II. If it were practicable to determine the amount invested by industry in budgets, standards, inventory controls and other related controls systems, the results would leave litttle doubt that industry is relying heavily on effective management controls to meet today's challenging industrial market. The current emphasis on establishing management controls, which almost invariably involve some additional clerical costs, coincides with recent interest in reducing clerical costs through such methods as automation and integrated data processing systems. It is imperative that all of the talents and skills of both the industrial engineer and the accountant be utilized in devising effective control systems.

Two Types of Thinking

Let us look at the situation in most industrial organizations and see how effectively the abilities usually associated with the two professions are being utilized today. In most cases, we will find distinct areas of responsibilities assigned to the separate industrial engineering and accounting organizations and little, if any, sharing of these responsibilities. The following are a few examples of management controls, the responsibility for which are assigned either to industrial engineering or to industrial accounting:

Usually assigned to industrial engineering

1. Wage incentive systems
2. Direct labor standards
3. Maintenance cost controls
4. Material usage controls
5. Equipment utilization controls

Usually assigned to industrial accounting

1. Indirect labor budgets
2. Raw material cost controls
3. Cost distribution systems
4. Inventory investment controls
5. Profit analysis and performance controls

Does this apparent division of responsibilities for control systems permit the maximum utilization of the skills of the industrial engineer and the accountant? We think not! We agree that today's division of functions and responsibilities is serving management in producing sound control systems. However, this success in the development of controls is the result of a balance of two separate views, rather than the merger of the two points of view. The balance is struck by offsetting the accountant's approach in one control against the engineer's in another. Does not this suggest that an intelligently planned merger of the two will assure a more effective utilization of all available skills in all controls?

Before continuing with the advantages of merging the "modus operandi" associated with the professions, let us explore the differences in the two. Since, in the majority of cases formal training is a prerequisite for both professions, we may begin by examining educational differences. The courses offered to accountants provide a thorough background in theory and principles with emphasis on the analyses of financial position and of results of operations. This emphasis leads the accountant to rely heavily on historical data in reaching conclusions. On the other hand, the industrial engineer's training stresses the utilization of scientific and mathematical techniques. He naturally tends to employ these techniques later in his business career. Before making too many enemies (or friends), let us recognize that these comparisons are not intended as criticisms of either type of thinking. Many effective controls are based largely on scientific or theoretical premises (e.g., time standards developed on laboratory analysis of motions). Others, just as effective, are devised from historical information (e.g., personnel budgets based on experience ratios). Management can be served best by the control embodying consideration of both what has been done (historical) and what can be done (scientific).

The Example of Standard Costs

The advantages of evaluating both the historical and the scientific side of

problems in establishing control can be illustrated by considering the various aspects of a standard cost system. Basically, we are dealing with controls over material, labor and overhead, designed primarily to regulate expenditures. Development and operation of the system involves the following steps:

1. Establishing standards or yardsticks for measuring performance
2. Devising systems for the collection and assimilation of data
3. Analyzing performance
4. Reporting to management

The remainder of this article compares the two approaches in a few of the particular phases of the above steps and indicates the advantages of combining efforts along both lines of thinking.

Developing Material Usage Standards

The task of developing material usage standards is usually assigned to the industrial engineer. The approach taken varies in individual cases, but it is possible to typify the engineering or scientific approach to such a problem. Assuming no previous material usage controls exist, the engineer usually will begin with an analysis of drawings to determine exact quantitative requirements for each unit to be manufactured. Proceeding from that point, he will consider the layout procedures to be employed and the dimensions of the raw materials involved in the product. After evaluating these factors to determine theoretical material requirements, he will attempt, through a scientific approach, to determine the manufacturing shrinkage or loss which may be attributable to shop errors, shortages of material in ideal dimensions, natural shrinkage due to the particular characteristics of the material, and other factors.

The engineer's approach to this type of problem will result in an effective control over the utilization of materials. An important qualification arises, however, when we consider management's use of this type of control. Comparisons of actual to standard usage will result in a difference theoretically representing shop inefficiency beyond that considered normal or unavoidable when standards were established. However, the shop loss factor and also the losses possibly resulting from buying in uneconomic dimensions, as well as other losses are determined against a scientific concept of what costs should be. But it is not possible to know what degree of performance can realistically be expected considering existing shop and purchasing conditions.

Had the accountant been consulted on this assignment, he would have tended by inclination and training to consider historical information then available or which might have been made available in arriving at the material usage standards.

For instance, establishing simple record-keeping functions in purchasing, layout and production areas for an interim period would have provided useful historical data. Combining this data with the scientifically calculated shrinkage factors, or perhaps modifying the one results by the other, would have permitted the establishment of more meaningful standards for control purposes. The resulting controls would be more useful in that management would be aware of the level of performance which could realistically be expected and could gauge action in controlling performance accordingly.

We are not suggesting through this example that better material usage standards could be established by assigning their development to accountants. The technical aspects of the subject clearly place the basic responsibility with the engineer. Nevertheless, this example clearly illustrates that utilization of both skills will produce the most effective controls.

Setting Direct Labor Standards

Although we associate the industrial engineer with direct labor methods and standards more than any other area, let us take a look, for purposes of example, at the methods the accountant might use in establishing labor standards without the aid of industrial engineering. Assuming that the accountant has a method of distributing actual labor hours and costs against product units, he might pursue an historical method in arriving at a direct labor standard. From accounting records he can obtain data which will give actual hours and labor costs, product by product. The simple summation of total labor costs divided by total units produced will provide an average actual labor cost per unit. What can be more realistic or representative of labor costs than actual costs?

However, considering the elements which went into this summation of costs, we begin to recognize some of the pitfalls of using a strict historical average of a standard. Any errors in record-keeping, such as an arbitrary allocation or the charging of hours to the wrong product, will distort the unit cost. Historical records of hours and rates do not necessarily reflect the effect of lot size, start up, or training on a specific product. The historical average tends to ignore attainable performance by substituting past performance.

Now assume that the task has been assigned to an industrial engineer. Relying on one or more of the scientific measurement techniques available, the industrial engineer can establish direct labor time standards for each element or stage of the manufacturing operation. These standards will indicate the labor requirements, in segments of time, for any or all of the steps required to

produce or process the company's products. Utilizing one of the more scientific techniques of measurement, such as a predetermined time value system, the industrial engineer would be able to develop realistic labor standards based on proven time values.

In developing such time standards, all elements for a given operation are broken down into micro-motions, utilizing a left-hand, right-hand motion analysis. During the analysis, the engineer recognizes the advantages and efficiencies of one motion pattern over another and establishes the standard based on what he considers the "best" method of performing the operation. After a complete motion analysis, the standard to perform the operation is simply the application of time values (in this case, predetermined time values) to each individual motion.

The time units applied to any motion or group of motions are not based on values simply derived from past performance. These time values have been developed and tested in the laboratory under scientific conditions or submitted to scientific testing in actual application. The summation of these small increments of time, each reflecting normal or attainable performance, results in scientifically correct time standards.

Nevertheless, neither the average actual standard or the scientific time standard will provide the most effective management control. The first can only serve to compare present with past performance. The second, while realistic as a standard, may be unrealistic as a control unless tempered by conditions not necessarily considered in establishing standards. The modification of the scientific standards by actual conditions not controllable by employees being measured will permit the most effective performance control. In other words, the best control combines the element of normal expectancy supplied by the industrial engineer, with the elements of actual conditions provided by the figures at the command of the accountant.

Devising Systems for Accumulation of Data

The benefits of combining engineering and accounting talents in establishing standards apply equally well to the devising of systems for the accumulation of data in a standard cost system. The responsibility for the development of systems for the accumulation of such data usually lies with the accountant and, in many cases, the industrial engineer is completely excluded from the problem. In developing the system, the accountant's training and inclination leads him to give the greatest consideration to the reporting requirements of the system and the clerical side of the accumulation operation. Typically, he tends to

underestimate the importance of shop conditions which could invalidate the data basic to management reporting. For example, the comparison of actual costs to standard costs requires a system of determining accurate production counts in the shop. Omissions or inaccuracies in such counts would distort the comparison and ultimately tend to mislead management. Inasmuch as the accountant would not normally be acquainted with all shop conditions, he might easily overlook inspection problems, schedule revisions, and other situations affecting the accuracy of reporting. Enlisting the aid of the industrial engineer in the development of the data accumulation system would tend to minimize systems problems resulting from failure to recognize the effects of shop practices.

Merging of Skills

Our formula for more effective management has assumed that the increasing necessity for better management controls can be best satisfied by combining the skills and talents of the industrial engineer and the accountant. The potential results of this combination have been demonstrated by example. Some of the indirect advantages of a closer working relationship between the two tend to make the premise even more significant. Integration of information before presentation is an especially inviting prospect. Instead of requiring management to balance one piece of information or control against another to arrive at a decision, the "weighting" process occurs in the development of it, thereby taking a load off executive shoulders. This "weighting" process is, of course, nothing more than what has been suggested throughout this article.

If we consider carefully management controls as they exist today, we recognize that some degree of association of the engineering and accounting professions exists. In view of management's increasing reliance on controls, it is inevitable that a greater degree of association must exist in the future. The key to more effective management controls lies beyond a superficial sharing of thoughts and ideas. A merger of the skills and talents of the industrial engineer and the industrial accountant is a necessity if the results required by tomorrow's management are to be achieved.

A Better Product Mix Recipe Through Direct Costing

by HENRY RASCH

Chief Accountant, Charmin Paper Mills, Green Bay, Wisconsin

The application of direct costing techniques to the product mix problem is pointed up in this paper. A budgeted product group profit contribution statement, detailed by products as to direct costs, is presented, accompanied by a similar statement of results achieved and also a statement of relative profit contribution of products. Discussion of disclosures of these exhibits leads to consideration, also illustrated, of determining optimum product mix.

THE SERVICE OF IDENTIFYING activity contributions that will result in the best profit recipe is our responsibility. This paper deals with only one portion of the recipe to show how product mix can be measured more easily through direct costing methods. However, it should at least be indicated how broad the significance of product mix is. Answers to such questions as the following may well provide the greater portion of the profit recipe for management:

1. The lowest price at which a product can be sold without loss.
2. When to eliminate a product.
3. When to add a new product.
4. When to eliminate or combine a sales territory.
5. When to add a new sales territory.
6. Where and how much money should be expended to increase production and sales volume.
7. What is the effect on profits when material prices and labor rates change.
8. What is the effect on profits when selling prices change.
9. What the profit will be at any sales level.
10. What should sales volume be to earn a specific amount of profit.
11. What is the effect on profits when the product mixture changes.
12. What products contribute the most profit.

Direct Costing; Trends in Reporting

Much has been written on direct costing, but I would like to set forth a few basic principles:

1. Direct costing is usually defined as identifying variable expenses in production and carried then (only) through the inventories into cost of sales. Period or fixed expenses are not identified to production or sales volume and are written-off during each accounting period below the marginal income figure.
2. The reflection of direct costs in a profit and loss statement does not result in a gross profit figure, but rather in a figure showing the contribution to overhead and profit.

3. In setting pricing policies and practices, full product costs with mark-up ratios for period costs must be developed for full recovery.

The current emphasis in reporting is in the direction of achieving condensation, specific purpose and correct interpretation of reports. Operating reports to management give at least a post mortem of the results which have taken place. This is all well and good, but the important point to be emphasized is that the time spent on this late reflection of facts could be utilized more efficiently on forward planning—where the business is going instead of where it has been. Decisions made now affect the present and the future but cannot change the past.

Budgeted, Actual, and Relative Profit Contribution Reports

However, specific examples are more important in this area than generalities. In setting up for measurement and reporting of the profit contribution of a given product we may find a situation in which many other products come from various combinations of the same facilities. One simple solution to presenting the full picture of product performance is to allocate the fixed expenses to the various product groupings in total. An analysis by product groupings will then show

BUDGETED PROFIT BY PRODUCTS

	Product 1	Product 2	Product 3	Total
Sales in Units	5,000	8,000	7,000	20,000
Sales in Dollars	$100,000	$128,000	$ 84,000	$312,000
Variable Deductions:				
Direct Material	$ 20,000	$ 36,000	$ 29,750	$ 85,750
Direct Labor	15,000	20,000	14,000	49,000
Variable Manufacturing Expense	15,000	18,000	12,250	45,250
Variable Selling Costs	10,000	14,000	10,500	34,500
Total Variable Deductions	$ 60,000	$ 88,000	$ 66,500	$214,500
Profit Contribution	$ 40,000	$ 40,000	$ 17,500	$ 97,500
% to Sales	40.0	31.3	20.8	31.3
Fixed Manufacturing, Selling and Administrative Costs				60,000
Operating Profit				$ 37,500
% to Sales				12.0

EXHIBIT 1

ACTUAL PROFIT BY PRODUCTS AND PLANT

	Product 1	Product 2	Product 3	Total
Sales in Units	5,500	8,200	6,000	19,700
Sales in Dollars	$110,000	$131,200	$ 72,000	$313,200
Variable Deductions at Standard:				
Direct Material	$ 22,000	$ 36,900	$ 25,500	$ 84,400
Direct Labor	16,500	20,500	12,000	49,000
Variable Manufacturing Expense	16,500	18,450	10,500	45,450
Variable Selling Costs	11,000	14,350	9,000	34,350
Total Variable Deductions at Standard	$ 66,000	$ 90,200	$ 57,000	$213,200
Profit Contribution at Standard	$ 44,000	$ 41,000	$ 15,000	$100,000
% to Sales	40.0	31.3	20.8	31.9
Variance on Variable Deductions	1,300	500	(700)	1,100
Profit Contribution at Actual	$ 45,300	$ 41,500	$ 14,300	$101,100
% to Sales	41.2	31.6	19.9	32.3
Budgeted Fixed Manufacturing, Selling, and Administrative Costs				60,000
Variances on Fixed Costs				(400)
Operating Profit				$ 40,700
% to Sales				13.0

EXHIBIT 2

what the profit contribution is and to what extent fixed expenses have been covered. In addition to the profit contribution ratio, a return on investment percentage can be determined for each major product grouping. These facts contribute for making immediate and long-range decisions.

Exhibits 1 and 2 are illustrative. Exhibit 1 shows a condensed planned profit statement for a manufacturing plant. It is broken down by individual products and combined in total. It gives a clear picture as to what each product should contribute towards fixed costs and profit. Product 1 is apparently the most desirable as it shows a ratio of 40.0 per cent, and Product 2 is second with a ratio of 31.3 per cent, which happens to be the average for the entire plant. Product 3 is the least desirable with a ratio of 20.8 per cent. The allocation of fixed manufacturing, selling, and administrative costs to the product group is shown in total and deducted from the total plant's profit contribution to arrive at the plant operating profit.

RELATIVE PROFIT CONTRIBUTION TOWARDS FIXED COSTS AND PROFITS

(For Products Within a Product Line In Order Of Declining Profitability)

Any Product Line

Variety	Basic Products							Units Per Hour	Profit Contribution Per Unit	Profit Contribution Per Hour
	AA	BB	CC	DD	XX	YY	ZZ			
	Relative Ranking									
CC - 1			1					25	$ 4	$100
AA - 5	2							14	7	98
XX - 3					3			18	5	90
BB - 2		4						10	8	80
YY - 7						5		12	6	72
AA - 8	6							7	9	63
ZZ - 4							7	17	3	51
Etc.										

EXHIBIT 3

Exhibit 2 shows a condensed actual profit statement for the same manufacturing plant after reflecting product mix changes and variances. It will be noticed that the standard profit to volume ratios remain the same by products but that the ratio changes to 31.9 per cent for the plant as a whole as compared to the budgeted ratio of 31.3 per cent. Due to a favorable variance of $1,100, the actual profit contribution ratio becomes 32.3 per cent. This statement assumes that the plant operating time is the same under both budgeted and actual circumstances. It shows that, although actual dollar sales are only $1,200 higher, the net operating profit is $3,200 higher, of which $2,500 is due to a more favorable product mix and $700 ($1,100-$400) due to better spending performance.

Exhibit 3 can be prepared to show the relative profit contribution towards fixed costs and profit for every product within a product line in order of declining profitability. It shows the amount contributed over direct costs to the total fixed costs and profits of the company. The example shows the profit contribution per unit and the extension into profit contribution per hour. It considers only direct costs chargeable against the specific product, the difference representing the "contribution" to profit. This can be presented on a profit to volume ratio basis or, if machine hours represent a critical factor for evaluation, on a machine-hour basis.

Using the Data in Improving Sales Mix

The question as to which products to stress in order to obtain the most profitable sales mix has always been of prime importance to businessmen. The amount of profit contribution, or the difference between the selling price and the variable costs, tells how much each product is contributing to fixed costs and

UTILIZING DIRECT COST INFORMATION FOR PRODUCT MIX

Absorption Cost Basis - Per Cent to Sales

	Product TR		Product TS	
Selling Price Per Unit		$12.60		$5.50
Variable Costs	$9.62		$4.18	
Fixed Costs	2.07	11.69	.65	4.83
Net Profit		$ .91		$ .67
% to Selling Price		7.2%		12.2%

Direct Cost Basis - Profit Contribution Per Hour

	Product TR	Product TS
Selling Price Per Unit	$12.60	$ 5.50
Variable Costs	9.62	4.18
Profit Contribution Towards Fixed Costs and Profit	$ 2.98	$ 1.32
Profit Contribution Ratio	23.6%	24.0%
Units Per Hour	45	70
Profit Contribution Per Hour	$134.10	$92.40

Results of "Pushing" Each Product

	Emphasizing Product TR	Emphasizing Product TS
Hours -- Product TR	200	100
Product TS	100	200
Total Hours	300	300
Sales in Units:		
Product TR	9,000	4,500
Product TS	7,000	14,000
Total Sales Units	16,000	18,500
Sales in Dollars:		
Product TR	$113,400	$ 56,700
Product TS	38,500	77,000
Total Dollar Sales	$151,900	$133,700
Variable Costs:		
Product TR	$ 86,580	$ 43,290
Product TS	29,260	58,520
Total Variable Costs	$115,840	$101.810
Profit Contribution Towards Fixed Costs and Profits	$ 36,060	$ 31,890
Profit Contribution Ratio	23.7%	23.9%

EXHIBIT 4

profits in the present sales mix. This information assists management to form an opinion as to which products will add the most to profits if sales of these can be increased. An example in this area will illustrate the application of direct costing principles as applied to products and product lines. Which product would you emphasize on the basic data shown at the top of Exhibit 4?

On the basis of these figures, it appears that Product TS is the most profitable as it shows the highest per cent profit to sales. However, the center section of

Exhibit 4, using the same figures, disputes this assumption. They show that, on a profit contribution per hour basis, Product TR is the most profitable, a situation opposite that of the previous illustration. The effect of pushing Product TR over Product TS in producing a higher profit is demonstrated by assuming the situation as to product sales mix reflected in the bottom section of the exhibit. The result illustrated is that, by concentrating additional selling effort on the promotion of Product TR, an additional profit of $4,170 can be realized. Fixed costs, of course, remain the same for both conditions. More total profit can be achieved in this manner without increasing selling prices and without reducing costs, with the same utilization of operating time.

Improving the Profit Picture

The profit picture of a company can be improved by resorting to any of the following methods:

1. Increase selling prices and maintain current sales volume.
2. Increase sales volume but maintain current sales price.
3. Improve the product sales mix with the use of selective selling techniques applied in conjunction with direct costing. Emphasize the products with the highest profit to volume ratios on a critical factor basis.
4. Reduce variable expenses.
5. Reduce fixed expenses.
6. Reduce the number of basic products, varieties, operations, handling, etc.

The final answer (if there is such a thing as a final answer) lies in what manner profits can be increased. Is it per cent profit to sales? Is it profit per unit? Is it per cent return on investment? Is it profit per machine hour? Is it total profit? Is it profit per share of stock? The correct answer is probably a combination of the above items with the emphasis on total profit contribution. Direct costing is one of the tools of management that can assist in making a final decision as to how to increase the total profit contribution.

A Reliable Operation Report in 24 Hours

by ROBERT R. TASTOR

Chief Accountant, International Heater Co., Utica, New York

Certain advantages as to composition of costs and existence of statistical information made issuance of a preliminary operating report each month more practicable in the company serving as background here than (possibly) in others. However, it is evident that the goal was not attained—nor is it maintained—without exercise of industry, alertness, and judgment. Application of these forms in any operation might well reveal circumstances permitting similar accomplishment.

THE PURPOSE of this paper is to describe how we provide our management with a skeletonized operating statement the day after the end of each accounting period without (and this is a most essential point) interfering with or disrupting the normal flow of bookkeeping data for the final statements. The preliminary story we present, which we liken to newspaper headlines based on bulletins ahead of the full story, has been reasonably accurate despite the high variability of production yield among the four major lines of products we market and the variability of distribution expenses from month to month in our highly seasonal industry.

We had for some time been supplying an educated guess on the first of the month as to what the net profit might be at the sales volume attained but had not attempted to compile the information in a systematic manner. However, the expansion of our distribution and sales force during the post-war years stimulated a study of the feasibility of preliminary operating statements, i.e., how accurate they could be made and what the additional work load would be. We discovered in our search that:

1. We had the necessary tools and information to accomplish the job without initiating any changes in our bookkeeping flow. We did consider it advisable to issue deadlines for the completion of summaries and reports, to prevent undue delays in completion of our estimates.
2. By making use of the information we already had available, the preliminary report could be a by-product of closing and would require no great amount of extra time to prepare.
3. The nature of our company's operations suited itself well to preliminary reporting. Of every cost dollar of inventory, a relatively small per cent consists of labor and plant overhead. An unusually large share of our manufacturing labor and overhead is incurred by a subsidiary which bills us in the same manner as any other major supplier. The bulk of every cost dollar, therefore, represented materials purchased from other suppliers, including the subsidiary mentioned.
4. Our standard costs and distribution and financial budgets, prepared each year, supplied basic information as to cost and expense flow, from which variations could be measured up and down as the sales volumes attained each period became known.

Our preliminary operating report, as eventually developed, contains figures for the following elements:

1. Net sales.
2. Standard cost of sales.
3. Gross margins on sales at standard.
4. General, administrative and selling expense.
5. Miscellaneous financial income and expense.
6. Plant variances.
7. Net profit on operations of the plant.

There is no attempt to provide any sub-account details here, for we are preparing headlines at this point not the complete story. Naturally, in putting the preliminary report together, major variances are spotted and briefly analyzed in order to point out either favorable or unfavorable results achieved in relation to the sales volume attained.

Net Sales, Standard Cost of Sales, Gross Margins

The section of the report from sales to gross margins utilizes, in our case, the information most readily available at the end of the month or the first day following. Gross billings are analyzed each day by product lines and sales territories, and standard costs are applied. The grand totals of all sales and costs are posted each day to a summary for reconciliation and proof and accumulated to the end of the period. These figures, copied on to a preliminary report worksheet enable gross sales, costs and gross margins to be known at any time during the month and the total available as soon as the period ends.

From the gross billings must be deducted credit memoranda issued customers, prepaid freight on shipments if any (the majority of shipments go out with freight allowed on the invoice), accruals of early season discounts (additional discounts offered for stock purchases in advance of rush season), and any miscellaneous cost adjustments on shipments previously processed. These deductions, in summary form, are either already available at end of month or, in the case of early-season discounts, can be ascertained by referring to the customers' accounts receivable ledgers (which serve double duty as sales statistics cards built into the accounting machine installation). Credit memos are summarized in the same manner as billings, although not with the same frequency. Prepaid freight is a columnar total in the cash disbursements journal. Exhibit 1 reflects running summary of billings, costs, and billing adjustments.

General Selling and Administrative Expenses

In addition to the more obvious benefits budgets afford for control of expenses and profit planning, the long hours spent developing a planned and budgeted flow of expenses at the beginning of the year enable us to take much of the

ACCUMULATED BILLINGS, COSTS AND MARGINS

	Sales	Costs	Gross Margins
Billings	502,000	375,000	127,000
Credit Memos	-7,100	-3,500	-3,600
Frt. on Branch Sales	-1,100	-	-1,100
Prepaid Frt. - Main Plant	-1,900	-	-1,900
Cost Adjustments		/500	-500
Early-Season Disc. Accrued	-1,500		-1,500
Net	490,400	372,000	118,400

EXHIBIT 1

guesswork and tedious searching out of obtaining workably accurate and practical general, selling, and administrative expense figures to compare with the gross margin section of the preliminary report. As in the development of our gross margins estimate, the general expense estimate is built without disturbing the normal flow of data required for the final and formal reports. Using the detailed budgeted level of expenses for the period as the basis for the end-of-month estimate, we arrive at a comparatively quick "actual" figure by measuring plus and minus factors from budget rather than wading through the entire list of accounts in the expense ledger for totals. On a percentage basis, the planned general expense for the month can be broken down into three basic categories: fixed portion 45%, items which can be definitely pinpointed at attained sales volume 15%, and all other 40%.

Thus it is that, in our case, to measure actual general, selling and administrative expense against budget, at least 45 percent of the elements are, for all practical purposes, already available at end-of-month without any preliminary account analysis. Of course, policy changes or changes in basic levels of salaries and/or personnel cause variations between actual and planned, but these differences are known well in advance of the end of the month and the original budgeted expenses are revised accordingly. Items in the fixed group are, in a functional listing—salaries, payroll taxes, property taxes, fire and liability insurance, depreciation, utilities, heat, engineering consultants' fees, publication advertising, etc. In a matter of minutes, then, the variations which may occur in this group can be noted on the preliminary report worksheet.

Items the amount of which can be definitely pinpointed at attained sales volume, although relatively light in comparison with the total of all general selling and administrative expenses, contains and discloses a variance element

which can be measured swiftly and almost to the penny. The major items in this category are cash discount on sales (available in total from the cash receipts journal), commissions on sales (contract per cent of individual commission territory sales), and provision for salaried salesmen's year-end bonuses (obtained from each territory sales and salesmen's expense worksheets). In the case of salaried salesmen's bonuses, the following data is available on the first of the month:

1. Each territory's gross billings (in total only, not by products as yet).
2. Total credit memos issued in the territory.
3. Prepaid freight and early season discount accruals.
4. Each salesman's base salary for the period.
5. Each salesman's territory expenses on a field salesman's expense worksheet. Usually the field expenses for the last week of the month are not yet in and an estimate based on the average of each man's first three of four weeks must be made. Accruals charged to the territories, such as auto depreciation and auto insurance, are already on the worksheet.

The group of remaining general expenses (40 percent of total) contains the elements which, though not classed as unpredictable, can be termed the unknown quantity in that they should, and most often do, follow the planned annual forecast but do not necessarily occur in the period being measured. These elements, therefore, must be analyzed in greater detail than the groups already considered. Here again, the job falls on the supervisory accountant and the analysis is made as the normal flow of posting goes on. We have a machine-prepared cash disbursements journal in which the bulk of the general ledger posting is accumulated simultaneously with machine check-writing. Practically all of the cash disbursements journal items are already in their appropriate accounts. The end-of-month accrual of suppliers' invoices is concurrently being posted to an accounts payable journal and general ledger. Most of the major expense accounts are being hand-analyzed in detail by accounting clerks as the sources of posting develop. These analyses were not initiated to facilitate the preliminary report but are necessary for the development of the regular formal expense reports rendered each month as supplementary management information. The supervisory accountant, by borrowing these hand analyses while in preparation and by concentrating his attention on the items falling under the third category of general expenses and comparing them with forecast expenses, can complete all the information required to calculate total of general, selling and administrative expenses for the period, with exception of invoices still to come in on the second or third day of the new month. As to these, concentrating on the major and sizable accounts, phone calls to various department heads are made, asking for information on commitments made or materials already in but not invoiced as yet.

Plant Variances

As mentioned earlier in this discussion, plant labor and overhead, in our operating picture, are a relatively light portion of each cost dollar. However, variances from standard fluctuate in a wider pattern (in per cent of annual plant variances) from period to period than do general expenses. Their effect on the total net profit of the company is, of course, smaller. For that reason, we feel it unnecessary to spend as much time developing this section of the preliminary report but, by use of a few pertinent and up-to-date sets of available statistics, we are able to forecast total plant variances with reasonable accuracy. Our company utilizes a standard cost system with standard burden rate for each department applied at the beginning of each year. Standard direct labor is adjusted as required during the year. The plant variance consists of:

Direct labor variance
Indirect labor variance
Operating supplies variance
Volume variance
Purchase variance

To measure these elements of plant variances quickly, we use the following data, which is available in total form by the end of month. A study of our immediate past experience indicates certain direct relationships between this data and actual past variances:

1. **Unit production planned for the period.**
2. **Actual unit production for the period.**
3. **Direct labor hours planned for the period.**
4. **Standard direct labor hours for actual units produced.**
5. **Direct labor hours actually paid for actual units produced.**
6. **Indirect labor hours planned for the period.**
7. **Actual indirect labor hours for the period.**

Putting these figures to use (the totals above at this point are totals only, not breakdowns by models or types as yet), we can apply past experience ratios and:

1. **Estimate volume variance through the relationship of Nos. 1 and 2 above.**
2. **Estimate direct labor variance through the relationship of Nos. 4 and 5 above.**
3. **Estimate indirect labor variance through the relationship of Nos. 6 and 7 above and also, with reference to the actual level of production in No. 2 and the planned level in No. 1.**

Relying on these historical ratios alone could result in estimates at complete variance with the actual performance reflected in the final operating reports. It is the chief cost accountant's task to make adjustments in our forecasts for the ever existing "non-recurrables", such as major maintenance expenses, experimental costs, re-work of defective materials, which would not be reflected in unit and labor statistics above. In effect he then modifies our rule-of-thumb ratios and, in addition, gives us the operating supplies variance forecast. His primary sources for his adjustments are "material used" tickets issued for all

consumption of materials, invoices charged to the plant overhead control account in the general ledger and payroll summaries for each pay period.

In our operation, any major item of plant expense other than strictly direct production work, such as alteration of a production department, is assigned a shop order number and all labor and material incurred for this expense are accumulated under this number until the work is completed. Any such expenses are easily referred to by appropriate number and a rough total is possible to obtain without reference to a multitude of related charges during the period. Of course, we must rely on the cost accountant's proximity to the plant superintendent and engineers for knowledge of what is on tap and to be expected in the last days of the period and which have not been reported by the first of the month. Purchase variances are charged directly to a variance account in the general ledger and are available as quickly as the majority of the expense items.

The Preliminary Report Has Its Roots in Already Available Data

We must add that no two companies could gather and assemble data in the same fashion and come up with a reasonably correct preliminary report. We have attempted to show only how our company has met the problem of informing our management as to its accomplishments as soon as possible. Any company with a detailed cost budget capable of division among the three major categories of fixed, directly variable, and semi-variable can produce an accurate preliminary report without the necessity of waiting for all bookkeeping mechanics to be completed. We must build the report from a variance from expected angle rather than a complete search of the entire list of accounts.

The system of budgets, while the primary requisite for preliminary reports, would be relatively uselesss for this purpose if the basic set of actual performance data referred to in this paper were not available quickly. Here again, statistics such as planned and actual units produced, standards and actual direct labor hours, total sales and costs, etc. were not introduced and compiled for the purpose of preparing the preliminary report but have been reported to management on a day to day basis for cost and inventory control for some time. The preliminary report is a result of rather than a cause for current, day-by-day management information.

Telling Mr. Brown What He Wants to Know

by ALBERT F. HACKETT

Controller and Office Manager, C. J. Bates & Son, Chester, Connecticut

In this succinctly told incident, the question of an operating man, based on a summary figure in a plant operations report, caused the accounting group concerned to analyze causes of changes in results (which were complicated by the fact that shipments are made both to customers and to other plants of the company) and to come up with a report—detailed because detail had been inquired for—which, upon study, was serviceable in several significant operating decisions.

AS THE PLANT ACCOUNTANT for your firm, how often have you heard the phone ring and a voice at the other end say, "Mr. Brown (or whoever it may be) wants to know why the year to date 1956 brass mill operations indicates a sales increase over the same period of 1955 of 32.2%, while profits for the period have increased by only 2.3%?" Such a statement could cause you some uncomfortable hours if you had no practical method of analyzing the condition. Fortunately, such drastic contrasts between sales and profits rarely exist but significant trends of like character do quite frequently present themselves. The example given in this paper sets forth such a critical picture and presents a practical method of financial statement analysis as a means to a satisfactory explanation.

The XYZ Manufacturing Company manufactures coils of brass strip from bars of brass cast in its own casting shop, sells the strip to commercial consumers (outside strip), the fabricating and cupping operations of the metals division (deliveries for fabricating and cupping) and to other manufacturing divisions of the company (other plant). The metals division of the company operates fabricating and cupping departments for which brass strip is manufactured by the mill operations. This mill is the major plant operation set forth on the year-to-date management report. It is with this operation that Mr. Brown, vice-president for operations—metals division, is concerned. Exhibit 1 indicates what he saw on the report which occasioned his telephone call.

Opening the Facts to Review

Mr. Brown's acquaintance with the operations of the metals division enabled him to understand the sales and earnings conditions of the fabricating and cupping operations. However, in his present position, the mill operations, which formerly were not his concern, came under his jurisdiction. He was only partly

METALS DIVISION REPORT OF SALES AND EARNINGS
YEAR-TO-DATE AUGUST 1956

		This Year	Last Year	Better or (Worse)	%
Sales:	Mill Operations	$2,445,787	$1,850,661	$595,126	32.2
	Fabricating Operations	629,500	567,480	62,020	10.9
	Cupping Operations	315,125	617,470	(302,345)	(49.0)
	Eliminations	(983,355)	(1,028,575)	45,220	4.4
	Totals	$2,407,057	$2,007,036	$400,021	19.9
Manufacturing Profit:					
	Mill Operations	$325,106	$317,745	$7,361	2.3
	Fabricating Operations	62,950	(14,120)	77,070	545.8
	Cupping Operations	60,155	114,232	(54,077)	(47.3)
	Eliminations	(27,100)	6,575	(33,675)	(512.2)
	Totals	$421,111	$424,432	($3,321)	(.8)

EXHIBIT 1

familiar with the operation and, therefore, could not fully understand the conditions for the mill operations stated on the management report. As a result of Mr. Brown's question for an explanation of the year-to-date sales and earnings—mill operations, the statement shown in Exhibit 2 was prepared. This statement, prepared by the metals accounting group, was precisely what was desired. The following principal observations were made:

1. Higher selling prices and increased volume had resulted in creating the higher sales revenue.
2. This bright picture was sharply offset and almost eliminated by greatly increased metal cost and conversion charges.

Through further study of the statement, it was also noted that outside strip sales at 58.6 per cent of the total sales volume had a profit spread of only 46 cents per hundred weight, when the increased selling price was weighted against metal and conversion cost increases. This emphasized that the mill operations were showing a slim profit only because volume was increased sharply over a like period of the preceding year. Conversion costs (the labor and overhead required to reduce cast bars to coils of brass strip) on sales of strip to the fabricating and cupping operations improved over the previous year. Of particular interest in this category was the improvement in cost of sales to cupping operations, which experienced a 49 per cent decrease over 1954. What caused this to be so? Why did higher volume of outside and other plant sales tend to reduce these conversion costs.

ANALYSIS OF BRASS MILL OPERATING RESULTS

Year-to-Date August 1956

Mill Operations — Comparative Product Line Sales and Earnings for Brass Mills Manufacture

Product Classification	M Pounds Sold This Year	M Pounds Sold Last Year	Sales This Year	Sales Last Year	Selling Price/Cwt. This Year	Selling Price/Cwt. Last Year	Total Cost/Cwt. This Year	Total Cost/Cwt. Last Year	Conversion Cost Per Cwt. This Year	Conversion Cost Per Cwt. Last Year	Manufacturing Profit This Year	Manufacturing Profit Last Year	Profit Ratio This Year	Profit Ratio Last Year
Outside Strip	2,500	1,900	1,432,250	881,290	57.29	46.91	50.36	40.44	13.97	11.76	173,250	122,998	12.1	13.8
Deliveries For Fabricating	400	280	224,400	114,616	51.12	41.72	45.35	35.00	13.01	13.79	22,280	16,807	10.0	14.1
Deliveries For Capping	1,550	2,175	778,875	829,763	50.25	38.15	42.19	30.18	6.88	9.01	134,930	173,450	16.8	20.9
Other Plant	57	29	30,182	12,792	52.95	44.11	44.80	29.45	11.72	11.19	4,646	2,530	11.4	19.7
Total	4,507	4,384	2,445,787	1,850,661	54.27	42.21	47.05	34.97	11.65	11.44	325,106	317,745	13.3	17.2

Analysis of Mill Sales, Cost and Earnings

1. Changes in Selling Price and Product Mix

	M-Lbs. Shipped This Year	Per Cwt. Change in Selling Price	Effect on Sales Revenue	Effect on Mfg. Profit
Outside Strip	2,500	10.38	259,500	259,500
Deliveries For Fabricating	400	9.40	37,600	37,600
Deliveries For Capping	1,550	12.10	187,550	187,550
Other Plant	57	8.84	5,039	5,039
Totals	4,507		489,689	489,689

2. Changes in Volume

	M-Lbs. Change This Year	Per Cwt. Sell. Price Last Year	Effect on Sales Revenue	Mfg. Profit Ratio Last Year	Effect on Mfg. Profit
Outside Strip	600	46.91	281,460	13.8	38,841
Deliveries For Fabricating	120	41.72	50,064	16.1	8,060
Deliveries For Capping	(625)	38.15	(238,438)	20.9	(49,834)
Other Plant	28	44.11	12,351	19.7	2,433
Totals	123		105,437		(350)

3. Changes in Metal Cost

	M-Lbs. Shipped This Year	Per Cwt. Change in Metal Cost	Effect on Mfg. Profit
Outside Strip	2,500	(7.71)	(192,750)
Deliveries For Fabricating	400	(11.35)	(45,400)
Deliveries For Capping	1,550	(14.14)	(219,170)
Other Plant	57	(7.23)	(4,121)
Totals	4,507		(461,697)

4. Changes in Conversion Cost

	M-Lbs. Shipped This Year	Per Cwt. Change in Conv. Cost	Effect on Mfg. Profit
Outside Strip	2,500	(5.31)	(13,250)
Deliveries For Fabricating	400	.78	3,120
Deliveries For Capping	1,550	2.13	33,015
Other Plant	57	1.56	(889)
Totals	4,507		(80,004)

	595,126	7,448
	595,126	7,341
		107

Management Report - Year-to-Date
Difference Due to Rounding off to nearest whole number, etc.

Explanatory Notes

1.) Figures not circled are better in relation to last year. Figures circled ( ) are worse in relation to last year.

2.) Metal Cost is Total Cost Per Cwt. less Conversion Cost Per Cwt.

Prices had been increased by the company in proportion to those made by competitive producers and additional increments could not be reasonably considered without the possibility of seriously jeopardizing an excellent industry position. Therefore, Mr. Brown pondered upon the practicability of using greater quantities of scrap metal as against the present policy of higher virgin metal content. If such a change in manufacturing process was possible and still produce high grade metal to customers' specifications, to what extent could metal costs be reduced? Finally, he wondered, were we under pricing sales of strip to the fabricating and cupping operations and thus penalizing the mill operations, so that these operations might show a healthier financial condition than would be possible if they were obliged to purchase metal from an outside mill? Mr. Brown's original question had brought forth a concrete sales, cost and earnings analysis. The analysis, in turn, brought new observations which, when presented to the plant management and accounting groups, created new efforts to reduce costs and increase profits.

Investigating the Implications

A cooperative effort between the accounting and engineering groups revealed the following facts:

1. Although total overhead had increased compared with the preceding year, heavier gauge metal being produced for the fabricating operations bettered conversion costs. In the case of the metal produced for the cupping operations, a sharp decrease in demand resulted in less absorption of overhead costs. However, increased volume of outside and other plant sales, plus orders calling for greater adherence to close tolerances, resulted in higher conversion costs for these product lines. Demand for a particular alloy, with which the mill had a considerable production problem was considered to be the chief cause of increased conversion costs for outside strip. (It should be noted that total mill overhead is assigned directly to product lines on the basis of volume. Thus, the greatly increased volume of outside strip carried the higher proportion of increased overhead.)

2. The engineering department investigated the possible use of greater quantities of scrap metal as a means of arresting the spiraling market conditions. It found that labor and overhead costs would increase somewhat in casting scrap metal over that of virgin metal. However, if quantities of scrap metal were sufficient so as not to impair production schedules, the lower cost metal (lower by approximately 7½ per cent as compared with virgin metal) would produce the same high grade metal to customers' specifications at an overall saving of approximately 17 cents per hundred weight.

3. In regard to pricing sales of strip to the fabricating and cupping operations, it was found that the selling price on strip to fabricating was being understated by approximately 70 cents per hundred weight due to an arithmetical error. On the year-to-date basis, this added $2,800. to the sales revenue from sales for the fabricating operation.

The Importance of "Why"

The financial analysis and subsequent findings provided management with a firm basis upon which to continue and plan future operations. Above all, a correction had been made, a reasonable explanation had been received for increased conversion costs, and the savings to be gained by the use of scrap metal had been disregarded due to inability to secure sufficient quantities plus the fact that it offered little relief in a rising market. Not to be overlooked is the fact that the original analysis requested brought forth a collective effort on the part of the metals cost accountants and plant engineers, thus creating an interest not previously attainable. A financial study of the type presented here brings the industrial accountants to the direct attention of management. Reports of this nature separate the bookkeeper from the accountant. They open new avenues of interest and investigation. Most important of all, they make of the plant accountant an actively thinking member of the management team. With similar financial reports which aid in making top level management decisions, Mr. Brown knows—but only if the accountants know the why of their figures—what, when, where, why and *from whom he can get the facts.*

Time Control Program for Installation Contracts

by CHARLES M. BOWEN

Manager, Budgetary Control Section, Industrial Div., York Division, Borg-Warner Corporation, York, Penna.

Execution of an installation contract is only a degree or two more critical than other processes in its requirement for coordinated operations if sundry delays are not to be very costly for the company. Any industrial company with more than one department faces comparable problems, even if it is only inventory accumulation. Hence the attention given in this article, and in the company it reflects, to a time control program may have, not only intrinsic interest but broader adaptability as well.

WE HAVE TRIED to utilize the clock and the calendar for the benefit of our customers, our employees and our stockholders. This article describes how. Our company, in its industrial division, manufactures and installs large air conditioning and refrigeration systems under contract. It has a total annual sales volume between forty and sixty million dollars. The average length of a contract is six months, with a minimum of one month and a maximum of eighteen months to two years. In each major problem confronting an operation of this sort time is an important factor. In dealing with this, we often use the word, "scheduling," which is merely a means of planning time. A lack of proper scheduling or time control, as we like to call it, can obviously be costly. It is for this reason that we have inaugurated a time control program.

The Problem — and an Illustration

A little additional background in characteristics of our operation is needed here. The basic elements of the installation such as the compressors, condensers, coolers, intercoolers and air conditioners, are manufactured in one plant in York, Pennsylvania. These units are then shipped to a job site, are combined with certain purchased items such as motors, electrical controls, etc. and are finally installed in the building where other operations such as water piping, duct work, insulation, and electrical wiring are performed In general the basic parts are more or less standard but the many combinations of different standard-size elements make a production-line type of manufacturing inapplicable. In short, almost every contract has certain characteristics which require engineering and

manufacturing attention. If a job shop which manufactures standard products is not a contradiction in terms, this is it.

The theory behind a time control program is basic. It means drawing and engineering, production, shipment, installation, erection, and testing must be scheduled to the satisfaction of both manufacturer and customer and closely tied in with building availabilities, subcontractors' performance, and financial planning and forecasting. Other aspects could be added and each one could be expanded upon at great length but space will not permit. However, to more clearly understand the problems presented and further determine how they affect the profit and loss statement and balance sheet, let us investigate one of them in some detail.

The most rigid from a time standpoint could be erection. Picture, if you will, a new multi-story building in New York City where the air conditioning equipment is to be installed on the roof. It obviously cannot be installed until the roof is ready. When the roof is ready to receive it, the foundations must have been prepared and, if they are concrete, set for the proper period of time. Then a rig or crane must be available. City authorities must be contacted for permits to block traffic, both motor and pedestrian. The equipment must be trucked in and arrive at the exact time. If it arrives one day early or one day late, new permits must be obtained, additional rigging costs are absorbed, and possible truck demurrages result.

Picture another situation in connection with erection. Let us suppose that a fifteen story hotel of, say, 1,500 rooms in a downtown metropolitan area is air conditioning all its rooms with a central station system individually controlled in each room. It is customary to install the primary equipment in the basement and run water piping to all rooms to feed individual units in each one. The pipes to all floors are called risers and, in most cases, only two rooms on a floor are fed from one set of risers This means that certain rooms, each directly above the other, must be closed and unavailable for occupancy until the risers are installed, holes in ceilings are replastered and painted, pipes are hidden, feed pipes to units are installed, units are installed and finally the entire system is tested for leaks. On some occasions, such as at convention times or other extremely busy seasons, permission cannot be given to close off any rooms. In this case, steamfitters must be laid off and rehired when rooms again become available. The use of the freight elevator in such an installation is another major factor in programming the installation.

The Contract Manager and His Job

The entire time control program crosses departmental lines, i.e., sales, en-

gineering, manufacturing, procurement and accounting. Hence it is necessary to have representatives of all these departments become a part of the program, with some one person to oversee the whole thing. For this reason, the position of contract manager was created. He is the keystone of the plan and becomes all-important. He must be a person of some authority who is able to make decisions, and must be able to settle differences between department managers, since the performance in one department, such as manufacturing, may follow and depend on the performance of engineering or sales. He must know procedures so as to know how and when to shortcut. He must know the financial end of contracting to be familiar with profit margins and returns on investment. In short, he must be a part of management.

His job starts when a contract is sold, by knowing the job, the products involved, the wanted date, the price, and the estimated gross profit. By knowing these items, he has all the basic tools with which to work and among them are the two limits between which he must accomplish his task. These are the date the contract is sold and the date the contract must be completed in order to satisfy the customer's requirements. If the contract has a penalty clause, the time control program becomes immediately necessary to prevent payment of the penalty. Thus, one short clause in a contract may make the idea of time control becoming cost control a very real thing.

How does the contract manager perform his task? Obviously he cannot do it alone. His first step is to seek the help of those who are going to produce the job and to guide them to meet the all-important ending date. To do this, a very simple form (Exhibit 1) has been developed which provides a means of allowing every one concerned to plan his portion of the job. This form shows its six major elements. When completed, the form is nothing more than an overall timetable of job progress. Each department manager is required to fill in completion dates beside his operation. The scheduling of these major functions can be done either by circulating the form to each manager and then returning it to the contract manager or through a conference with the managers represented, together or individually. Since this is to be an accurate timetable, there is much planning and scheduling in each of the various departments before a date is resolved. When dates are established and the schedule is returned to the contract manager, he reviews it to see that the timing is in line with requirements of the customer. If scheduled dates are such that conditions of the contract are not met, it becomes the duty of the contract manager to call the parties together to see where and how the dates can be improved.

Too often, without time control, a situation exists which prevents a date from being met until it is too late to do anything about it. In a like manner,

PRELIMINARY CONTRACT SCHEDULE

Division	Estimated Completion Date	Remarks
Engineering		
Drawings		
Manufactured Material		
Purchased Compenents		
Subcontracted Labor		
Erection Labor		

Customer - Name — Contract No.

Address — Customer Wanted Date

EXHIBIT 1

cases have been known in which the end date of the contract crept up to within a few weeks with more than a few weeks' work still to be accomplished. What normally happens? The usual reaction is to pull out all stops, work all the overtime possible, put on a second shift if necessary, and get the job done. And what happens to costs? They start soaring. With one simple form, such as we have described, and the proper analysis of it, these far too frequent situations can be eliminated.

Accommodating Revisions in Completion Dates

However, perfection is seldom reached with one attempt and likewise the first schedule for a contract is not always the end schedule. In long-range contracts, conditions can change for any number of reasons and may alter the schedule. Material shortages can delay production, numerous elements may delay the job site, strikes can close plants. There are many others. And so, as these delays affect the basic operations of our contract, they must be recorded to determine the effect on the ultimate goal—the end date. To achieve this,

CONTRACT STATUS REPORT

Mentity	Comp.	Ordered From	Date	Order No.	Committed Non York Cost	Required Date	Promise	Promise	Shipped	Via	Remarks
A		York	8/3	86R66200		10/12	10/1	10/3	10/8	YM	
B		Marathon	8/3	10739	950.00	10/12	10/12		10/10	PRR	
C		M-4	8/3	10740	195.00	10/12	10/10		10/12	PRR	

EXHIBIT 2

another form, a status report (Exhibit 2) must be prepared. It must include more detailed information than that shown on Exhibit 1. On this form, the contract is broken down into its integral components and for each one, a scheduled delivery or completion date is shown These status reports can be revised once a week, once each day, or as the change occurs. We have found the most suitable time is when the change occurs. This alternative immediately supplies pertinent information to all interested parties.

For example, let us assume that a contract calls for a 300 horsepower electric motor for which delivery has been scheduled for March 5. On February 20 notice is received that shipment of the motor will be delayed one month. This could have costly effects. If the motor must be installed on the same base as the compressor and the compressor is scheduled for completion March 1, it might be advantageous to hold up work and concentrate the labor force on another job. Or it might be deemed advisable to complete the compressor, ship it on schedule, and have the motor shipped directly to the job site and installed there, with a possible saving in transportation.

Many examples could be given but the point we are making is that with a proper time control program trouble or delays can be spotted when they occur and, by attacking these delays immediately, we can often save much in the way of excess costs. It must be emphasized here that the status reports must be for major components of the job and judgment must be exercised as to how much detail is to be scheduled. Without sensible reasoning or with an attempt to schedule each minor nut and bolt, a time control program will break down under its own weight of paper.

The Accountant's Role in the Program

So far we have discussed various phases of the time control program along lines of material, procurement, manufacturing, engineering and other functions. One might ask how the accountant fits into the picture. To answer that, we must carry the whole program over into dollars, which can be done simply by the magic touch of a contract estimate. By reviewing the status report with the contract estimate, we can quickly determine selling prices for each of the major elements which are listed and, by further looking at the scheduled dates for each of the items, we can obtain scheduling dollars of sales volume by date. In order to summarize all of this information, we have used a summary schedule shown in Exhibit 3. This reflects each contract on the books and details the dollars of sales volume we should expect to realize each month from each contract. By adding the monthly columns, we can determine what our

SUMMARY SCHEDULE OF SALES REALIZATION

Contract	Factory	Customer	Secured Price	To Date	Balance	Jan. *

*Repeat this column for as many months as it is desired to forecast realization.

EXHIBIT 3

total sales volume should be. The summary schedule, since its inception, has become an all-important guide post for management through the accountant by providing the following information and usage:

1. Forecasting sales volume — By adding each monthly column, an accurate sales forecast can be determined for any given number of months.
2. Forecasting gross profit — Using the estimated gross profit ratio for each contract and applying that ratio to the monthly sales volume to determine the gross profit to be realized on each contract each month, the expected gross profit for the month can easily be obtained.
3. Forecasting inventory levels — Knowing costs to determine inventory relief and also knowing labor, material and overhead charges to inventories, we can quickly determine the expected inventory level for the next few months.
4. Determining cash requirements — By a study of subcontractors' dates, purchased material deliveries, and erection labor forecasts, cash requirements beyond those normally used in factory operations may be forecast.
5. Assisting sales effort — With some degree of interpretation, the summary schedule may be used to determine in which months more sales are required or which ones are booked solid from a manufacturing standpoint.

In short, we might call the summary schedule the crystal ball of management. Here again, however, the contract summary schedule must be revised periodically to reflect changes in order to serve its useful purpose.

The Contract Management Committee

One final step must be taken to make sure of the results desired from a time control program. This is to establish a committee to review periodically all information which has become available. The committee must be composed of individuals of some authority from all phases of the business, including sales, engineering, purchasing, production, and accounting and should be chaired by the contract manager. It should be the committee's function to meet regularly, preferably once a week, and to review critical contracts and report to management on their status. It must be the committee's duty to know

each such contract and be cognizant of the difficulties involved. It is in these committee meetings that decisions must be made whether to work overtime in manufacturing or in engineering, whether to ship without a motor, and whether to hold up production on one job and concentrate more on another to meet changing time tables. The accountant on the committee is its watchdog. His duties are to inform the committee of the scheduled sales volume, what costs are involved in making certain decisions, what cost reductions can be assumed from other decisions, and generally transpose the entire thinking of the committee into dollars and cents.

There is one other problem which confronts a business of this type and frequently comes to the attention of the contract management committee, although it might be referred to top management for final decision. This is the problem of customer change in "wanted" date at the last minute. All too frequently, products are completed and ready for shipment, or partly completed to the point that changes in shop scheduling are impractical from a cost standpoint, when a customer wires that shipment should be held up for a stated or, in some cases, unstated period of time. We have stressed the need for customer satisfaction. However, on this point we must view the problem more selfishly if we are going to operate a time control program. In the last analysis, this benefits the customer. The sales engineer must inform the customer (from the start) that, when he requests shipment and completion on a certain date he will have it—and both parties will be bound by the date. Here again, a complete, well organized and well executed time control program is the ultimate answer.

Time Control Must Be Programmed

Time control is profit control in an untold number of instances in an untold number of companies. It is achieved through a deliberate program. To you presidents, sales managers and other executives who know that time is money and who dread the sound of the telephone bell for fear that another dissatisfied customer is on the wire, we ask "Do you have a time control program?"

Factors to be Considered in Designing a Production Control System

by H. E. METCALF

Senior Member, Management Consulting Staff, Scovell, Wellington & Co., Springfield, Mass.

The system used to regulate the quantity of production and its timing through effective schedules which run from the purchase of raw materials to the shipment of the finished product can be designed and organized to function effectively only if all operating conditions are provided for because a manufacturing plant is essentially a single unit. This article outlines the major factors that must be recognized in order to tie in properly a production control unit with the sales, purchasing, manufacturing, manufacturing service, personnel and financial departments.

THE CIRCUMSTANCES and conditions to be considered in designing a production control system are of such a number and so varied in character that practically every phase of a business is involved. The extent to which any particular phase is involved and the degree to which the circumstances and conditions existing must be considered will, of course, vary markedly with the nature of the concern. A company engaged in mass production presents one type of problem. A job shop which may seldom produce exactly the same product twice presents a distinctly different problem. Nevertheless, the factors to be considered in designing a production control system in either case are similar. This paper discusses those factors which usually have to be considered in a plant of medium-size with a somewhat varied line of products.

The Basis: Product Requirements

Consideration should be given first to establishing a detailed list of the products involved. This probably sounds extremely elementary, but it is surprising how seldom even like products can be handled in exactly the same manner from start to finish. Certain products may be provided for, and sold from, inventory. Others may be standard products but produced only to order. Still others may be special products which usually are produced only to order. The first two variations may be found in a single line of standard products. It is, therefore, well to know at the outset even the slight differences between products.

With a complete list of products available, a considerable amount of data with regard to each should be accumulated prior to making any attempt to de-

sign any phase of the production control system. Bills of material stating the exact specifications of the materials used and the quantity per unit of product should be obtained or arrangements made to have them prepared. Similarly, operation or route sheets setting forth the sequence of operations, together with time allowances expressed as set-up and operating time per unit of product and the tooling necessary to meet the time allowances, should be obtained or prepared. Both the bills of material and the operation sheets require further study. With regard to the bills of material, economical purchase quantities should be established, material procurement times should be determined and the existing "inventoried" and "bought-to-order" data should be clearly noted. Similarly, with regard to the operation sheets, economical manufacturing quantities should be established, the necessary time allowances to move materials between operations should be determined and some additional time allowances should be set up at operations which require a bank of work in process ahead of them.

One of the first uses of such data concerning each product is in establishing the time in process. The term "time in process" has far more meaning than the manufacturing time involved. It refers to the amount of time which must elapse between authorization to release an order and completion of the order ready for shipment. It takes into consideration the time to process an order in production control, the material procurement time, the set up and running time for all manufacturing operations, both direct and indirect, the move time between operations, the bank of work in process required ahead of certain operations, and the time to accumulate a number of parts in storage for issue to an assembly operation if such operations are involved. This time in process should be established for each part involved in a product and for the product as a whole. The detailed data for each part should be developed in such a manner that the time prior to the required completion date that each operation should be performed (including that of purchasing) is readily available. The summarized data with regard to the product as a whole must be based, of course, on the components requiring the longest time in process. At the outset, the time in process data should be developed in terms of normal, economical manufacturing quantities at normal operating levels and should reflect the generally prevailing blend of products. Later, it may be necessary to vary these conditions, depending on requirements.

Relationship With Sales Requirements

The time in process data for each product as a whole serves as the basis on

which to establish the time prior to a selected completion date when the sales department must issue firm orders as to its requirements. This tie-in between the sales department and production control must be very close. There must be complete agreement between the two departments that the sales department will provide a schedule of its requirements sufficiently far in advance of the necessary completion date to allow for the agreed upon time in process. In establishing these requirements each product must be considered on its own merits. Some products may be sold from inventory. In such cases, the time in process and a schedule of advance sales requirements reflecting it is of great importance because, unless the sales requirements are exactly the same day after day, the inventory position will become out of balance within a short period if such requirement schedules are not provided. Other products are made only to order. For these, the time in process determines the delivery date that the sales department can promise and this can vary materially as the volume of such orders increases or decreases.

The sales requirement schedules, in all probability, will show only the quantity of each product required at a given time. This information is seldom sufficient to make sure of completion of the schedules on time. Consideration should be given to the problem of interpreting this information into other schedules which can be used readily by those responsible for producing the requirements on time. Usually, some means must be developed through which the quantities as requested by the sales department can be "exploded" into the corresponding required quantities of component parts and/or raw materials. The bills of material already discussed will serve for this purpose and the result is a listing of the required purchases and a list of manufacturing orders.

Relationship With Purchasing and Production

With a knowledge of what must be purchased and what must be produced, it is then necessary to determine when the purchase orders should be placed and when the manufacturing orders should be released. The overall time in process for any given product will usually be found to depend on the procurement time of only a few materials and/or the manufacturing time of a relatively few parts. In the interests of economy, it is not usually good practice to purchase or manufacture too far in advance. Application of the detailed data accumulated in establishing the time in process for each part to the list of purchase requirements and manufacturing orders will result in the determination of schedules which will indicate when each purchase order should be placed, when each manufacturing order should be released, when each manufacturing

order should be at each operation involved and what the hours are required (load) at each operation at specific times. During the development of this procedure certain other factors must be considered. Provision must be made to combine parts common to several products into single orders and, where materials are taken from inventory rather than purchased or manufactured for each order, provision must be made to replenish these inventories.

If purchase and manufacturing schedules prepared as described are adhered to, the sales requirements should be produced efficiently. Consideration has been given to economical purchase quantities, economical manufacturing quantities and the proper direct and indirect time allowances. Materials are due to be received as needed. Manufacturing order release dates have been established which reflect the availability of material. Dates have been established indicating when each order should be processed at each operation. And finally, time required at each operation on a specific date has been determined. The latter can be compared with the available capacity, thus allowing time to correct for over or under loaded conditions even before the release of the schedule. The need for adherence to the schedules by all concerned has been mentioned. Certainly, this is necessary for proper results but perfect adherence to any schedule is seldom possible. What is equally if not more important is notification to the production control department immediately of any deviation from the established schedules. With the entire schedule available, the production control department should be in a position to evaluate the effect of any deviation and to initiate corrective measures in a manner which will cause the least upset to the remainder of the schedule.

Consideration should be given, then, to establishing procedures through which the production control department will be able to follow the progress of each item on the schedules. With regard to purchasing, the production control department should know what orders are placed and when. There should be a purchase order follow-up system under which purchasing can notify production control ahead of the due date that materials will not be received in accordance with schedule. And, of course, the production control department should be apprised of the availability of materials immediately upon receipt. With regard to the manufacturing follow up, the production control department should know immediately when materials are withdrawn from stock as an indication that an order has started in process. Following this, production control must continually receive reports of the progress of each order, operation by operation, as it moves to completion. All of this information is necessary to enable the production control department to know the current status of all orders, to maintain proper inventory records and to continually develop current

unperformed workload data at each manufacturing operation. The latter data are an indication of progress in themselves and a necessity in planning personnel requirements.

Emphasis has been placed on the fact that the production control department should be notified immediately of any deviations from schedules in order that the effect of these deviations may be evaluated and corrective measures initiated. Provisions must also be made to communicate the net effect (the effect of the initial deviation less that of the corrective measures taken) to the sales department. The sales department is faced with the problem of satisfying its customers and the job will be made considerably easier if the customer can be contacted prior to the expected delivery date.

Form and Procedures Always Important

It was not intended that this paper include a discussion of the forms and/or procedures which could be used in developing a production control system. Nor was it the intent to discuss just how such forms can be prepared or how the procedures can be carried out. Nevertheless, the design of forms and the development of the detailed procedures are two other factors which must be given attention. The forms and procedures should be as simple as possible under the conditions existing and the procedures should be routine, with as few as possible being of the type which require use only when and if certain events occur.

The question as to how procedures are to be carried out is another factor to be considered at the time that forms are being designed and procedural details established. There will be inventories to be maintained, material requirement and manufacturing schedules to be determined and prepared, load charts to be maintained and a number of transactions and dispatching and follow-up reports recorded, prepared and communicated to several individuals. Each item must be considered by itself and in relation to all others in order to determine whether it can be handled by hand clerical work, by semi-automatic equipment, by completely automatic equipment, or by a combination of any of these methods.

Throughout this discussion, no mention has been made of personnel. This is an extremely important factor and one which should be considered in relation to the conclusions reached with regard to each step to be incorporated in the production control system. A sound procedure is of no value if the available personnel either can not or will not carry it out. Procedure and the assignment of work and the responsibility for it are sometimes dictated by the ability and characteristics of the available personnel. In the end, however, the quantity and

the quality of the personnel needed must be determined and the duties, responsibilities and authority of each job clearly established.

An All-Departments Projects

In summation, it may well be restated that the factors to be considered in designing a production control system involves nearly every phase of the business. The sales department is involved in its preparation of sales requirement schedules; the engineering and methods and standards departments are involved in the development and maintenance of data through which the sales requirement schedules can be interpreted in the form of purchase and manufacturing schedules; the cost (and other) departments are involved in establishing economical manufacturing quantities; the financial (and other) departments are involved where any discussion of inventories is required; the purchasing department is involved in the acquisition of the required materials; the manufacturing departments are involved in producing the sales requirements; the personnel department is involved as a result of load data developed; and lastly, service groups such as tool control, inventory control and maintenance all have their functions in the operation of, and must be given consideration in the design of, a production control system.

Cost Reporting in an Advertising Agency

by

KENNARD WEBSTER and C. G. UFFELMAN

Partner
Jackson & Zoenglein
Rochester, New York

Assistant Treasurer
Charles L. Rumrill & Co., Inc.
Rochester, New York

Costs by client feature the reports developed under the procedure here described and contain gross, marginal, and net income figures. The types of actions available when dealings with a client reveal no contribution to net profit (or a negative one) are indicated. Adequate cost and revenue individualization of accounts is presented as now necessary to the advertising industry and acceptable and helpful to account executives.

CONSENT DECREES entered into with the courts by various associations in the advertising and publishing fields have raised doubts about the future of the 15 per cent commission upon which advertising agencies have depended for their income. For years that portion of the gross cost of magazine and newspaper space and radio and TV time was rebated to the agency by the media, a continuation of practices started when agencies were principally space brokers. This new situation brings about the necessity for consideration of some substitute methods of billing for the agencies' services which will be fair to both the client and the agency and will conform to legal requirements.

Far from destroying the agency system, the decrees may well increase both the number of services required and the amount of compensation for such services. It will surely increase the negotiations between advertiser and agency as to the method of billing and the amount of services. The keeping of accurate records of time and services becomes of utmost importance to an advertising agency.

Revelations and Usefulness of the Report Developed

The cost system presented in this article has been in operation for over five years at Charles L. Rumrill & Co., Inc. It is accepted by agency and client alike as an equitable measure of costs and expenses. The agency is medium-sized with a total annual sales volume of five to six million dollars, 45 per cent

in consumer accounts and 55 per cent in industrial accounts. The latter poses a particular problem. Unlike consumer advertising, industrial advertising consists principally of low unit-cost insertions. Producing these low unit-cost insertions has always been a problem for agencies attempting to live within a gross budget of 15 per cent of billings. It has been general practice in this particular field to supplement commissions by billing additional service fees. The cost system described here was installed largely to provide a fair basis for service fee billings. It may be said in advance of more particular description that the first cost reports which we developed surprised everyone. Some high-volume accounts, always considered as backbones of the agency, showed very low margin or even losses. Comparatively low budget accounts were, in some instances, contributing substantially to agency profits. The information gave top management a completely new perspective on agency operation and it gave our clients a picture of our problems in a manner they could understand.

The cost system was designed as simply as accuracy would permit. There are only six people in the accounting office. The load has been carried by existing personnel with the cooperation of the rest of the agency in giving us time reports. An accounting machine already available was used for tabulation. We had a little trouble at first in convincing high-salaried account executives that they should spend time making out time reports, but they finally accepted the obligation and are now first in line to receive the resulting cost reports. The reports indicate where to concentrate attention. The data points out rather clearly that it is as dangerous to put too little time on an account as too much. We have increased our service to clients with this philosophy.

The approach to construction of the reports is to allocate every expense to the clients except taxes on income. Our cost sheets then show net profit before taxes and by client. We accumulate this information daily and weekly and run our reports quarterly. (We started out with monthly reports but found that seasonal fluctuations, time involved in producing jobs, etc., made the month too short a period for proper analysis.) The completed report is the Individual Client Operating Statement as shown in Exhibit 1. The book basis is our Chart of Accounts (Exhibit 2) which is fundamentally the American Association of Advertising Agencies' list of object accounts, further subdivided for our particular operation. Methods of preparation of the report are discussed in the paragraphs which follow, in order of appearance of items on the individual client operating statement.

INDIVIDUAL CLIENT OPERATING STATEMENT

	Current Quarter*			Proof	Previous	Previous		
	Actual	Budget	Over or Under	Total	Actual	Budget	Total	Proof
BILLINGS								
Media	40,769.25	39,459.00	1,310.25	153,879.65	36,823.40	36,826.00	73,651.40	.00
Mechanicals	4,754.65	7,249.27	2,494.62 CR	23,651.60	5,855.76	5,791.92	11,647.68	.00
RTV Mechanicals								
Advertising Materials	9,537.91	9,096.99	442.92	44,266.91	10,381.03	7,252.98	25,634.01	.00
Publicity								
Service Fees	1,249.98	1,250.01	.03 CR	4,999.98	1,249.98	1,250.01	2,499.99	.00
TOTAL BILLINGS	56,311.79	57,053.27	741.48 CR	.00				
TOTAL COSTS	45,517.67	.00	45,517.67	.00	50,784.10		50,784.10	.00
GROSS INCOME								
Media	6,115.38	5,918.85	196.53	23,081.94	5,523.81	5,523.99	11,047.71	.00
Mechanicals	1,252.08	1,927.00	674.12 CR	6,496.86	1,777.36	1,539.61	3,316.97	.00
RTV Mechanicals								
Advertising Materials	2,175.88	2,417.63	241.75 CR	9,498.42	2,976.92	1,927.99	4,904.91	.00
Publicity								
Service Fees	1,249.98	1,250.01	.03 CR	4,999.98	1,249.98	1,250.01	2,499.99	.00
TOTAL GROSS INCOME	10,796.12	11,513.49	719.37 CR	.00				
DIRECT CHARGES								
Direct Salaries	2,380.93		2,380.93	7,044.74	4,663.81		4,663.81	.00
Overhead on Direct Salaries	2,405.98		2,405.98	4,675.61	2,269.63		2,269.63	.00
Account Handling	167.29		167.29	299.42	132.13		132.13	.00
TOTAL DIRECT EXPENSES	4,954.20	.00	4,954.20	.00				
Profit Before Gen. & Adm. Exp.	5,839.92		5,839.92	10,302.42	4,462.50		4,462.50	.00
Gen. & Adm. Expenses	1,813.88 CR		1,813.63 CR	4,602.63 CR	2,788.75		2,788.75	.00
NET OPERATING PROFIT	4,026.04	.00	4,026.04	.00				

*In use, report also contains a set of year-to-date columns

EXHIBIT 1

Total Billings

Office copies of all billings include gross-sale price, cost (outside cost of placing the advertising) and net commissions. Originally, separate bills are prepared for each billing classification (media, mechanicals, etc.) and filing of office copies is in the same order in which these billings will be accumulated for cost purposes. The actual cost run appearing on Exhibit 1 is done on the accounting machine, which accumulates the total of each bill in a non-print register and throws the total sales by classes into the actual column for the quarter. The budget figure is picked up from the budget summary (not shown). Each horizontal line of the report is a separate machine cycle. The five columns on the right of the statement are proof and pickup columns. The report is completed through the "total gross income" line in this billing run. In practice, the billing section and the direct charges and the general and administrative expense sections below it are run concurrently on the machine for accumulation of automatic down totals. The machine operation is not started until all necessary information has been accumulated. The statement is thus produced in one continuous operation.

ADVERTISING AGENCY CHART OF ACCOUNTS

Object Classification	Account Handling-Commercial 510	Account Handling-Industrial 520	Radio & Television 530	Art 540	Production 550	Copy 560	Publicity 570	Media 580	Research & Library 590	Contingency 595	Accounting 595	Administration 595	General & Executive 595	Direct Client Expense 595	
Officers salaries	01	01		01		01						01	01		
Staff salaries	02	02	02	02	02	02	02	02	02	02		02	02		
Holidays and vacations	03	03	03	03	03	03	03	03	03	03		03	03		
Group insurance	04	04	04	04	04	04	04	04	04	04		04	04		
State disability insurance													05		
Payroll taxes															
F. I. C. A.	06	06	06	06	06	06	06	06	06	06		06	06		
State unemployment	07	07	07	07	07	07	07	07	07	07		07	07		
Federal unemployment	08	08	08	08	08	08	08	08	08	08		08	08		
Profit sharing retirement fund	09	09	09	09	09	09	09	09	09	09		09	09		
Outside consultation-															
Fees and expenses							10						10		
Unbillable client expenses - Other															12
Unbillable outside visualization															13
Unbillable outside copy charges															14
Unbillable errors	15	15	15	15	15										
Unbillable research															16
Travel and entertainment direct															17
Advertising													20		
Bad debts													21		
Depreciation and amortization											22				
Director's fees													23		
Donations													24		
Dues and subscriptions	25	25	25	25	25	25	25	25	25			25	25		
Electricity											30				
Travel, entertainment, and dues	31	31	31	31	31	31	31	31	31			31	31		
General															
Equipment maintenance											32				
Insurance - Life of officers													33		
Insurance - General and compensation											34		34		
Legal and accounting fees												35	35		
Personnel training													41		
Postage and express - Not rebilled													42		
Telephone and telegraph - Not rebilled													43		
Rent, maintenance, and repairs											44				
Sales promotion													45		
Motivation studies													50		
Supplies, stationery, and petty equipment	51	51	51	51	51	51	51	51	51			51	51		
Unclassified expense	52	52	52	52	52	52	52	52	52	52	52	52	52		

EXHIBIT 2

Direct Charges and General and Administrative Expense

Direct charges are divided into three categories:

1. **Direct salaries (from individual time sheets).**
2. **Overhead on direct salaries (by department on direct labor dollar basis).**
3. **Accounting handling or direct client expense (from unit tickets derived from accounting machine vouchers payable run).**

As to direct salaries, all personnel submit weekly time sheets by client (and product divisions within a client if desired) showing hours worked, to the closest one-quarter hour. Non-productive time is also shown, to account for total hours worked. This record is the basis for all subsequent prorations and dependability is essential. Service personnel, such as the administrative officers, accounting department, personnel director, receptionists, etc., do not submit time sheets. Their salaries are charged to "non-productive departments" from the payroll register. These time sheets are presented to the accounting department

SUMMARY WORK SHEET

DIRECT LABOR BY CLIENT AND DEPARTMENT
ALLOCATION OF DEPARTMENTAL OVERHEAD BY CLIENT

Art Dept. Personnel No.	Rate	Client No. 1 Hrs.	Amt.	Client No. 2 Hrs.	Amt.	Client No. 3 Hrs.	Amt.	Client No. 36 Hrs.	Amt.	Totals (Dept. Only)	
101	5.570			19 3/4	110.01			3 1/2	19.50		
110	7.162	1/2	3.58			1	7.16	67 1/4	481.64		
111	4.244					35 1/4	149.60				
112	2.483							186	461.84		
183	1.517	1	1.52	1/2	.76	2	3.03	3	4.55		
184	3.862			37	142.89	9 1/2	36.69	2 1/4	8.69		
185	1.517					6	9.10				
TOTALS		179 3/4	570.47	76 1/4	298.60	181 1/2	636.28	774	2767.82	4172	15160.69
Burden-1.36270%			777.38		406.90		864.33		3771.71		20659.47
Copy Dept.											
203	5.835			1 1/2	8.75	4	23.34				
218	3.183	4 3/4	15.12			6	19.10	225 1/4	716.97		
219	2.743	49 3/4	136.46	3/4	2.06			3 1/4	8.91		
247	1.517					15 3/4	23.89	83 1/4	126.29		
263	3.979	1	3.98	4 1/4	16.91			122 1/2	487.43		
286	3.714					2 3/4	10.21				
TOTALS		58 1/4	170.08	18 1/4	99.27	199 1/2	615.72	456 3/4	1436.24	3775 1/2	13411.97
Burden-.83178%			141.47		82.57		512.14		1194.64		11155.81
Client Totals											
Direct Salaries			2505.59		1929.85		2380.93		7986.32		
Dept. Overhead			3284.62		2247.59		2405.98		9187.02		

EXHIBIT 3

weekly and proved for total hours. The hourly totals are then transcribed to keysort tickets for future sorting by department and client. The first sort is by department, then by employee and client within the department. Cards are accumulated by quarter and summaried as shown in Exhibit 3, which provides totals by client. It will be noticed that employee numbers are used, rather than names, to maintain confidential payroll information. When an individual client operating statement looks bad, this time summary is the first source document examined for reasons. The value of this summary has proven its worth over and over again. It shows in one place the total time in hours and dollars by worker and department for each client. Total direct labor dollars are transcribed to the work sheet (illustrated in Exhibit 4) for incorporation in the main report (Exhibit 1) by the accounting machine operation.

The overhead apportionment in Exhibit 4 will be noted. It is apportioned to clients by using departmental overhead rates on a direct labor dollar basis. Direct labor dollars were considered a better distribution factor than direct labor hours because it costs more to keep high salaried personnel at their desks. Departmental rates were used for two reasons:

SUMMARY WORK SHEET
EXPENSE AND BURDEN ALLOCATIONS BY CLIENT

Client	Direct Salaries	Department Overhead on Direct Salaries	Direct Client Expenses	General & Administrative Expenses (.76184%)
# 1	2505.59	3284.62	98.55	1908.85
# 2	1929.85	2247.59	36.49	1470.23
# 3	2380.93	2405.98	167.29	1813.88
# 36	7986.32	9187.02	258.67	6084.28
TOTALS	72446.53	78011.47	4842.45	55192.47

EXHIBIT 4

1. Variation in direct and indirect salaries among departments.
2. Variation in other expenses, such as space occupied, stationery, supplies, club memberships, etc.

The first step in the apportionment is to record quarterly departmental expenses on a work sheet. This work is set up in the same manner as the chart of accounts shown in Exhibit 2, plus a total column. The sheet is footed and cross cast. Occupancy expenses are prorated by square foot of space occupied and new totals entered. The direct salary dollars accumulated on Exhibit 3 are subtracted from these totals to arrive at net indirect salaries and expenses for each department. Overhead rates are computed and entered on Exhibit 3 for allocation to clients. The general and administrative rate is computed on total direct salary dollars and entered in Column 4 of Exhibit 4. Using Exhibit 3, we extend overhead rates for individual clients, by departments, and foot and crosscast overhead figures. Totals are entered by client in Column 2 at Exhibit 4, for later use by the machine operator. Using the general administrative rate in Column 4, we compute overhead allocations on direct salary amounts in Column 1.

The sheet is now completed except for direct client expenses. For purchased items, a unit ticket is automatically produced from the voucher payable run on the accounting machine. Other items, such as unbillable jobs, etc., are handled by journal vouchers. These unit tickets are sorted by client, totalled by adding machine tape, and entered in Column 3 of Exhibit 4, which is totalled,

proved to the general ledger, and turned over to the machine operator for use in preparing the individual client operating statement.

All information for the statement has now been prepared. It is run on the machine and net profits (representing net profits before taxes on income) are proved to the statement of profit and loss.

Meaning of Profit Items on the Client Statements

Total gross income on each statement is an actual figure dependable without mental reservations. Profit before general and administrative expense takes account of direct salaries, other costs such as travel, entertainment, unbillable items, etc., plus proration of departmental expenses (but only those necessary to keep a worker at his work) so as to yield a marginal income figure. If a cost statement is in the black at this stage, then the client is contributing towards our general and administrative expenses and our profit. If a cost statement is in the red at this stage, this fact is a signal for prompt attention. Net operating profit requires deduction of all other expenses in the period in which incurred, except taxes on income. This is the amount available for division between the government and the stockholders and for future expansion of the firm. These reports by client enable management to take one of several steps to correct difficult profit situations. In general, these actions fall into three classes:

1. Discussion with client as to amount of service he really wants. In several cases, clients suggested that we discontinue certain services to bring our profit into line. In other cases, they offered to pay for extra services, either on a service-by-service basis or as a guaranteed annual return to the agency.
2. Rearrangement of personnel to provide less expensive help to bring costs in line.
3. Agreement for a guaranteed annual return. Since some companies have complex marketing problems which require the services of specialists and highly trained personnel, the agency has been faced with the problems of providing them at a profit. In the light of the total job and of the time and costs involved, the agency has been able to offer a realistic total cost for such services which is fair to both parties. The cost accounting figures provide a solid non-controversial basis for negotiations.

Cost Reporting for a Poultry Enterprise

by MARVIN TODD

General Cost Accountant, Maine Broilers, Inc., Brunswick, Maine

Little has been published to date on the cost methods employed by the agricultural segment of the nation's economy. Here is a brief description of the operation of a system used by a grower of broilers. Unfamiliar as the industry may be to most, it will be observed by the reader that the basic cost pattern (revealed here by the cost sheet illustrated) is more familiar. The company operates under a contract arrangement with growers and maintains a working foreman-type relationship with them.

THE COMMERCIAL POULTRY RAISER has seen a variation of on-the-farm sales prices from a dollar a pound to as low as sixteen cents. In the days of the dollar price, cost accounting was not the essential that it is today.

The broiler-fryer segment of the poultry industry, to which this article is confined, has expanded nearly four times over the past ten years. Consumption in the country averages approximately sixteen pounds per person and, with an increase in population of two and one half million persons per year, the industry is faced with an even greater potential.

The Operating Structure

Our company is a corporation engaged in the business of growing and marketing live poultry as broilers or fryers. The company itself, has no physical assets, such as land, buildings, or equipment, nor do we employ labor on an hourly basis. The plants we operate are structures owned by individuals, either built specifically as poultry houses or else converted, such as dairy barns. Labor is performed by the owner of the property on a contract basis. This is what is called "contract growing" in the industry and is the most common practice utilized.

The agreement to which we work with our growers requires us to furnish day-old chicks, feed, fuel, litter, medicine, supplies, insurance on the birds, and supervision. The grower is obligated to supply buildings, equipment, and labor. These are usual arrangements. Many variations of other contract provisions may occur. The contract may contain an agreement to split the profit or loss equally, or on some other basis. Or the grower may elect to take a straight rental of his buildings based upon square footage by floor space available for housing. The rental basis is the one which we use. In return for his labor in caring for the

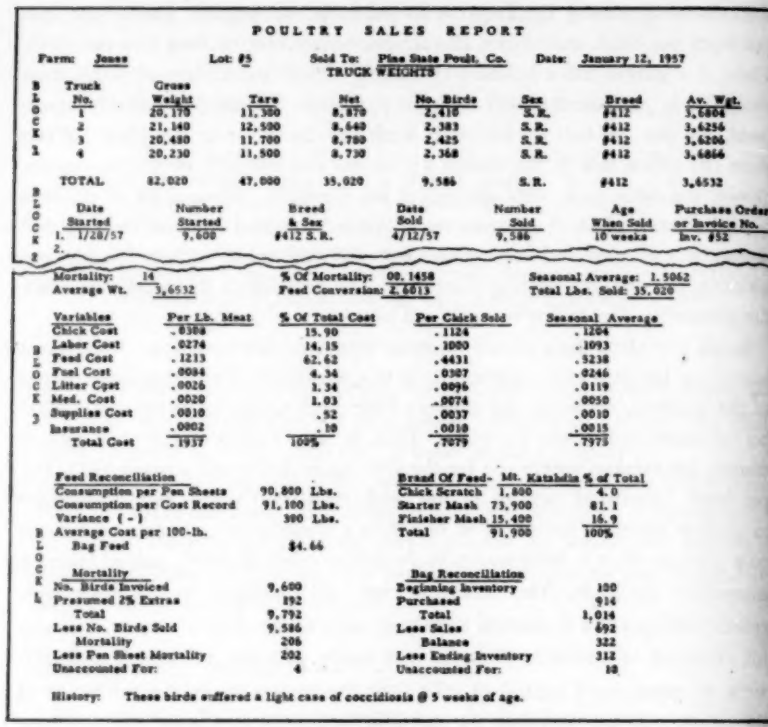
chicks and furnishing buildings and equipment, we pay the grower one cent per week per chick started and allocate one square foot of floor area per chick. Thus, if a grower has a building containing 12,000 square feet of usable floor space, he is paid on the basis of $120 per week. Of the $120 weekly agreement, we pay one-half or $60 each week the chicks are in the plant. When these chicks are sold at the market age of ten and one half weeks, we pay the grower the other half, after adjustment for mortality. When a lot of chickens is sold from a plant, it is necessary to remove the used litter or bedding and replace it with new and thoroughly clean the equipment, such as feeding and watering troughs, the heating stoves, etc. To accomplish this work, we allow the grower ten days before we again put in chicks.

In all pay plans there should be some incentive. We have one. We depend heavily on the grower to keep mortality to a minimum. To help us keep on top of the problem, we adjust the grower's final check on the lot to the actual number of chicks sold from his plant. Thus, if only 11,500 chicks were sold to market, his average weekly pay for the growing period would amount to $115— per week (numerical ratio of 11,500 chicks to 12,000 square feet). Mortality in poultry might be compared to rejects in a manufacturing operation, but the only salvage value is information to determine cause of death, gained from an autopsy of the birds. This service is most often rendered by the State Agriculture Colleges and is resorted to only in cases where cause of demise is doubtful. Control of mortality does not rest solely with the grower. Twice each week an experienced supervisor calls upon the grower to observe the health of the chicks and ascertain that the company principles of feeding and management are being adhered to.

The Cost Sheet: Detail Record of Lots Sold

Job order costing is natural to our operations. Our cost accounting department is tied closely to top mangement as decisions, whether immediate or far-reaching, ultimately depend upon results of business as outlined on our cost sheet (Exhibit 1). The cost figures shown are for explanatory purposes only. We have attempted to bring together in this one form all pertinent facts which should be known when evaluation of the results of a lot of chickens is made.

The first block of the form is a replica of our sales invoice and forms the base on which all costs per pound of meat are figured, as well as cost per chick sold and also our labor cost, inasmuch as the total number of chickens sold, reported here, determines the number of chickens the grower will be paid for.



POULTRY SALES REPORT

Farm: Jones Lot: #5 Sold To: Pine State Poult. Co. Date: January 12, 1957

TRUCK WEIGHTS

BLOCK 1

Truck No.	Gross Weight	Tare	Net	No. Birds	Sex	Breed	Av. Wgt.
1	20,170	11,350	8,870	2,410	S.R.	#412	3,6804
2	21,140	12,500	8,640	2,383	S.R.	#412	3,6256
3	20,480	11,700	8,780	2,425	S.R.	#412	3,6206
4	20,230	11,500	8,730	2,368	S.R.	#412	3,6866
TOTAL	82,020	47,050	35,020	9,586	S.R.	#412	3,6532

BLOCK 2

	Date Started	Number Started	Breed & Sex	Date Sold	Number Sold	Age When Sold	Purchase Order or Invoice No.
1.	1/28/57	9,600	#412 S.R.	4/12/57	9,586	10 weeks	Inv. #52
2.							

Mortality: 14 % Of Mortality: 00.1458 Seasonal Average: 1.5062

Average Wt. 3,6532 Feed Conversion: 2.6013 Total Lbs. Sold: 35,020

BLOCK 3

Variables	Per Lb. Meat	% Of Total Cost	Per Chick Sold	Seasonal Average
Chick Cost	.0388	15.90	.1124	.1204
Labor Cost	.0274	14.15	.1000	.1093
Feed Cost	.1213	62.62	.4431	.5238
Fuel Cost	.0084	4.34	.0307	.0246
Litter Cost	.0026	1.34	.0096	.0119
Med. Cost	.0020	1.03	.0074	.0050
Supplies Cost	.0010	.52	.0037	.0010
Insurance	.0002	.10	.0010	.0015
Total Cost	.1937	100%	.7079	.7975

BLOCK 4

Feed Reconciliation		Brand Of Feed-	Mt. Katahdin	% of Total
Consumption per Pen Sheets	90,800 Lbs.	Chick Scratch	1,800	4.0
Consumption per Cost Record	91,100 Lbs.	Starter Mash	73,900	81.1
Variance (-)	300 Lbs.	Finisher Mash	15,400	16.9
Average Cost per 100-lb. Bag Feed	$4.66	Total	91,900	100%

BLOCK 5

Mortality		Bag Reconciliation	
No. Birds Invoiced	9,600	Beginning Inventory	130
Presumed 2% Extras	192	Purchased	914
Total	9,792	Total	1,044
Less No. Birds Sold	9,586	Less Sales	692
Mortality	206	Balance	322
Less Pen Sheet Mortality	202	Less Ending Inventory	312
Unaccounted For:	4	Unaccounted For:	10

History: These birds suffered a light case of coccidiosis @ 5 weeks of age.

EXHIBIT 1

One might wonder at the difference in the average weights of the different truck loads of birds, as shown in the last column of Block 1. These chickens were raised in a two-story poultry building and, quite often, weight differences develop because the birds on the top floor of a building will not develop equally as well as those on the first floor, due to excess heat, poor ventilation, etc. The average weight as recorded at the bottom of the far-right column is the figure on which results of the entire lot are based.

Most of the columns in Block 1 are self-explanatory, with perhaps the exception of the sex and breed columns. "S.R." in the sex column refers to "straight run", i.e., as the eggs hatch. Here the division of sex is nearly always half cockerels and half pullets. However, this will differ according to breeds. We have one breed which will run as high as 52 per cent cockerels, another around 50.5 per cent cockerels. The breed of bird illustrated is a cross-bred bird containing the best characteristics of three different purebreds. To keep

identification of the components simple, we use a numbering system in place of breed names.

Block 2 of the cost sheet comprises the vital statistics of the lot. Quite often we fill this entire block with different breeds when we run special testing projects for an associate hatchery which wants to compare results from the different breeds of birds they are developing. When this is being done, all breeds are started at the same time, identical numbers of each sex are used and they all eat the same type of feed, receive the same management, and are all weighed at specific ages during their growing period.

The Cost Sheet: Unit Costs and Statistical Data

Block 3 really digs into the cost picture of the lot. Here is recorded the mortality (number of deaths), per cent of mortality, the seasonal average of mortality, average weight, feed conversion (number of pounds of feed the chickens ate to gain a pound of meat), and total pounds of meat sold. It will be immediately recognized that this feed conversion rate is the item most sought after by poultrymen, as this figure is one of the best tools a baby chick salesman will have at his disposal. The conversion figure is tied very closely to the breeding work done on the chicken. Another very important factor, held in no less esteem by growers, is the mortality figure which, in the poultry field, does not have the scrap value of salvage in the hard goods industries!

We are interested in per pound costs to the hundredths of cents, as chickens are sold live from our plants at a per pound price based upon the Urner-Barry current quotation which is issued daily during the business week. Two years ago we compiled standards for our costs, which were short-lived due to increased demand on our facilities for use in growth tests. These introduced irregularities which could not be accommodated in a standard cost system as such. However, we converted the standards to useful seasonal averages for five different seasons for the year. Looking across Block 3 of the sample cost sheet, it will be noticed our seasonal average for feed cost is considerably higher than recent actual "per chick sold" cost. This is the result of lower feed costs in the current market, coupled with a change made to a lower cost brand of feed in the summer of 1955. As yet we have not accumulated enough history of the new feed costs to enable us to change the figure which we use as average for the late spring season.

In our cost reporting figures we do not include any amount for overhead. For our costs to have any significance to management, they must be presented in much the same manner as they would be quoted by an independent grower who does not consider overhead but deals for the most part in out-of-pocket

PEN SHEET

NAME: Jones
MONTH: March
DATE STARTED: 1/28/57

BREED: 1280 #412

ACTUAL NO. STARTED:

Date	Mash (Lbs.)	Pellet (Lbs.)	Grit (Lbs.)	Salt (Lbs.)	Sulfa	Mortality	Remarks
1	150						
2	150	50					
3	150						
4	150			75			
28	150	150				1	
29	200	150				1	Culled
30	100	250					
31	50	300					
TOTAL	5,550	2,100	80	175		5	

EXHIBIT 2

costs. There is not complete uniformity in the industry with respect to unit of costing. It is not uncommon to hear feed cost cited per pound of meat. At the same time, the conversation may drift to fuel cost per chick sold. To enable our figures to be interpreted readily by all, we show the variable costs both for pound of meat and for chick sold.

Block 4 of the cost sheet serves as a check on both the grower and supervisors. The feed reconciliation section is to inform the supervisors as to the accuracy of the grower's feeding schedule. When the day-old chicks are put into the pens, a record we call the Pen Sheet (Exhibit 2), identifying the chickens, is tacked to the wall and the grower records each day the amount of the different forms of feed, the amount of grit given, and medicine (if any) administered, the mortality for the day, and any pertinent remarks deemed advisable. A new pen sheet is used each month and, when the birds are sold, the sheets are returned to the office for the columns of feed and mortality to be added, entered on the cost sheet, and compared with figures taken from the purchase journal. (We have had growers whose figures have been so accurate that we could probably have made good use of these individuals as bookkeepers in the office.)

The mortality section of Block 4 serves as a check on the supplying hatchery, the grower, and the live poultry salesman. It is the custom in the poultry industry for the hatcheryman to put into each box of 100 chickens two extra ones at no charge. This is done by the hatcheryman as a precaution to guarantee 100 per cent live delivery of the number of chicks ordered. Because of the "fragility" of the product, it is considered a necessary step. Yet there have been

many cases in which the growers have sold more live chickens from their plant than the chick purchase invoices have called for. However, mortality for the cost sheet does not include these extra chickens, as we are accounting for invoiced figures. On the other hand, we do consider them in the mortality section of Block 4 to maintain our check on delivery and performance.

Under the brand-of-feed-section, we take from the purchase journal the quantities of the different forms of feed that have been fed to the lot. Each manufacturer of feed has engineered his product to produce what he believes to be the best protein, vitamin and mineral level for the feeding of poultry and, along with this, has set up a feeding program to be followed by the growers using his brand. Only by keeping and recapitulating records of this feed as purchased for each plant are we able to determine how well the manufacturer's feeding program is being followed.

Our bag account is taken care of in the last section of Block 4. Until the past few years, poultry feed has been sold exclusively in cotton and burlap bags. Of late, feed in fifty-pound paper bags has been increasing in popularity on account of ease in handling and lower wastage. However, we do have a few plants still feeding chicks from the cloth bags supplied by manufacturers who have not converted to paper. These bags, when empty and in good condition, will bring from ten to fourteen cents apiece on the market—and what poultryman wouldn't welcome a reduction of from $2.00 to $2.80 per ton of feed?

Comment Section of the Form

The final item on our cost sheet is reserved for a comment by the serviceman on the performance of the chickens in the lot. He is consulted before the cost sheet is typewritten as whether or not he cares to make any observations.

Holding to Significant — Rather than Detailed — Cost Reporting

In our cost reporting, we have attempted to cover all information useful to management in making an analysis of financial results of the operations, yet we have tried to keep the cost sheet from becoming tiresome and a chore—either to prepare or peruse—and I believe we have made headway in bringing the significant data onto the form in a readable arrangement. Nevertheless, we are never wholly satisfied and are continually on the watch to improve. We believe this attitude is one of the hallmarks of effective accounting for any enterprise of any kind or size.

It will have been noted that nowhere in this article have we discussed which came first, the chicken or the egg. We have long ago settled this question in our own minds to our own satisfaction.

Consigned Stock Inventory and Activity Control Procedure

by J. E. LACENSKI

Controller's Staff, Bucyrus-Erie Company, South Milwaukee, Wisconsin

Business today travels on paper. It seems we cannot escape it. However, we can shorten the route. The solutions to many of our daily administrative problems do not necessarily lie in the installation of ponderous equipment but in simple application of many everyday tools and devices. One such application is described in this paper as it pertains to a system of control for consigned parts inventories, utilizing principally a "key" order form and duplications of it.

THE EFFICIENT operation of a parts service department is dependent upon the availability of these parts when required for shipment. This, we feel, can be accomplished most effectively by the physical segregation of parts to be used for parts service only. The ideal situation encompasses the establishment of centrally located parts warehouses in those areas in which the demand for parts service is greatest, supplemented by stocks of parts maintained by distributors on a consigned basis. However, if the company's organizational structure does not lend itself to the maintenance of separate warehouse facilities, the stocks for parts service located at the source plants may be separated locally from those required for production.

It is of critical importance that the parts department maintain an adequate supply of active parts on hand for the replenishment of sales out of the distributor's consigned stocks. Of equal importance is the current maintenance of a supply of active parts on the stock shelves of the distributor. When a breakdown occurs, the customer expects to obtain replacement for the part damaged. The service department should be in a position to provide this part immediately because the customer's downtime is costly to him and should be avoided or at least reduced to a minimum. The fulfillment of these responsibilities by a distributor is adequate reason for the maintenance of a systematic method of stock control. (They are *not* fulfilled by maintaining an oversupply of parts.) A review of the types of machines already sold in a particular area and of those machines moving into an area must be exercised. A determination of the needs of these machines must be anticipated.

Prior to the introduction of consigned stock control as described in the following paragraphs, the sales of

material consigned to distributors were reported monthly on a consigned stock sales report. The invoicing of sales and the posting of sales to stock records were based on this report. The replacement in consigned stocks of items sold was initiated through the issuance of a stock replenishment order by the distributor, with the resulting internal preparation and processing of a parts order by the company. Shipments of the parts and an invoice to record the replenishment followed from the parts order. The rapid growth of our consigned stock business and the desire to give our distributors and customers better parts service, made it essential to find a system with which sales could be recorded and stock replenishments and/or additions processed in a faster and more efficient manner.

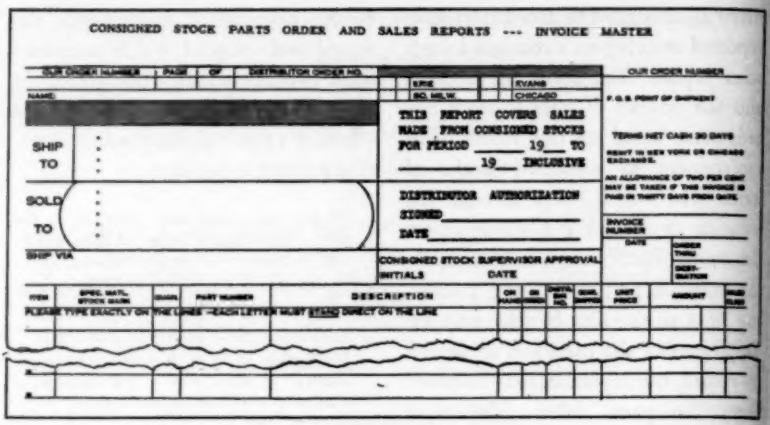
Devising the Key Form and Building the Procedure

On one occasion during this system study, a distributor's consigned stock sales report and a stock replenishment order covering identical items and quantities were received simultaneously. It was obvious that the distributor had reported sales for the month and immediately ordered replenishments to bring his stock up to a required level. This incident prompted the question, "Why not combine the two documents into one report?" After much planning and consultation with the departments involved and various distributors, a form was designed and adopted which combined these two operations. The consigned Stock Parts Order and Sales Report (Exhibit 1) was planned with a threefold purpose in mind:

1. To promote speed and simplicity in the preparation of the report of sales and in the re-ordering of replenishments.
2. To provide for prompt replenishment of items sold from stock.
3. To eliminate the duplication of effort in the typing of a parts order for replenishment of stock and in the subsequent invoicing of the material shipped.

Increased responsibility for consigned stock control was offered to the distributor and experience has proven that such control of consigned stocks has added efficiency if the distributor properly assumes the responsibility for managing them. He is in a good position to anticipate demand and to determine levels at which stocks should be maintained to meet requirements of his territory. The distributors' parts managers are now authorized to handle and control stocks in line with supervision from the supplying plant, which reviews stocks for proper balance by territories. A series of regional meetings with distributors was held, at which time the new form and ordering procedures were introduced. All distributors were asked to review their stocks and to bring all items up to required quantities prior to adoption of the new procedures.

The new report is the key form of the system and is of a snap-out variety.



CONSIGNED STOCK PARTS ORDER AND SALES REPORTS --- INVOICE MASTER

OUR ORDER NUMBER | PAGE | OF | DISTRIBUTOR ORDER NO.

NAME:

SHIP TO

SOLD TO

SHIP VIA

KINK
NO. MILW.

EVANS
CHICAGO

THIS REPORT COVERS SALES MADE FROM CONSIGNED STOCKS FOR PERIOD _____ 19__ TO _____ 19__ INCLUSIVE

DISTRIBUTOR AUTHORIZATION
SIGNED
DATE

CONSIGNED STOCK SUPERVISOR APPROVAL
INITIALS DATE

OUR ORDER NUMBER

F. O. B. POINT OF SHIPMENT

TERMS NET CASH 30 DAYS

REMIT IN NEW YORK OR CHICAGO EXCHANGE.

AN ALLOWANCE OF TWO PER CENT MAY BE TAKEN IF THIS INVOICE IS PAID IN THIRTY DAYS FROM DATE.

INVOICE NUMBER
DATE
ORDER THRU
DESCRIPTION

ITEM	SPEC. MATL. STOCK SIZE	QUAN.	PART NUMBER	DESCRIPTION	QUAN.	UNIT PRICE	AMOUNT	PRICE CLAS.
PLEASE TYPE EXACTLY ON THE LINES —EACH LETTER MUST STAND DIRECT ON THE LINE								
1.								
2.								

EXHIBIT 1

It is normally prepared weekly by the distributor in the following number of copies and forwarded to the parts department for processing:

1. Office master (with ditto carbon attached)
2. Invoice master (with ditto carbon attached)
3. Office copy (for parts department use)
4. Acknowledgement copy
5. Distributor's file copy

The types of orders prepared by the distributor on this form are classified as follows:

1. Replenishment order and sales report
2. Non-replenishment sales report
3. Additions order
4. New stock items order

Receiving and Processing Distributors' Orders

The consigned stock parts order and sales report prepared by the distributor is mailed in an envelope furnished him. The report is received in the parts department and a number is assigned to all orders requiring shipment of material. The order number assigned appears on both the office and invoice masters. Order numbers are not assigned to non-replenishment sales reports, since this type of report covers sales only and will not result in shipment of material. All orders are then passed to a consigned stock supervisor, who reviews them for correctness as to part number, descriptions, etc., and corrections are made as necessary. When the order has been accepted, approval of the consigned stock supervisor is indicated on the face of the order and it is passed to the order processing clerks. Here the invoice master is separated from the office master and routed to the invoicing division. The acknowledgement copy, with notations or corrections made by the consigned stock super-

visor, is detached and returned to the distributor. On non-replenishment sales reports the office master is not processed since the report is purely a report of sales and will not result in the shipment of replenishments. On all other orders, the office master (with ditto carbon attached) is marked for stock availability.

After stock availability has been determined and indicated on the order, the office master is routed to the duplicating machine operator where copies are prepared for distribution as follows:

1. Shipping department copy
2. Packing list
3. Office copies
   a. Parts department (follow-up copy)
   b. Stock department
   c. Production department (if required)
   d. Purchasing department (if required)
4. Material requisitions (tabulating cards)

The material requisitions are routed to the stock department for the withdrawal of material for stock, along with the stock department copy. All material withdrawn from shipment is routed to the shipping department. As the material is packaged and crated for shipment, the quantities so packed are indicated on both the packing list and the shipping copy. All boxes or packages comprising the shipment are consecutively numbered. The packing list, in addition to showing quantities shipped, is marked to indicate the box number in which the part is contained. The box containing the packing list is especially marked for easy identification.

When shipment has been made, the shipping copy is routed to the parts department, where notations as to shipping information are made to that department's office copy. In this manner the parts department is currently informed on shipping progress and, should inquiries be made concerning the status of an order, it is in a position to furnish the information. Each shipping copy of additions orders is routed from the parts department to the invoicing division, to serve as notice to price the invoice master of additions orders for items shipped. After being processed for consignment invoicing purposes, the shipping copy of additions orders is returned to the parts department to accommodate shipment of back-ordered items, whereas the shipping copy of replenishment orders does not reach the invoicing division until complete shipment of the order has been made.

Invoice masters, when received in the invoicing division, are separated as to type of order. All invoice masters of additions orders are held until notification of shipment has been received. When the shipping copy of additions orders is received, the quantities as shipped are transcribed to the invoice master (with ditto carbon attached) and the invoice master is routed to the pricing division where unit prices are indicated and extended for quantities shipped. The priced in-

voice master is returned to the invoicing division and invoice copies are prepared on the duplicating machine. Inasmuch as the effect of the additions order has been a transfer of material into stock, the invoice rendered by the invoicing division is a consignment invoice and the result is an increase in the particular distributor's consigned stock account. Invoices covering back-ordered shipments to stock are prepared on an electromatic typewriter and are issued for each separate shipment. The number of shipments required to complete an order rarely exceed two. The distribtuion of invoices is made as required.

Invoice masters for replenishment and non-replenishment sales, when received in the invoicing division, are routed directly to the pricing division where the unit prices of all items are inserted, extensions completed, and appropriate sales distribution codes indicated. The priced invoice master is then returned to the invoicing division where copies, as follows, are prepared on the duplicating machine:

1. Firm invoice to distributor, with required number of copies.
2. Accounts receivable copy.
3. Consigned stock cost accounting and tabulating copy.
4. Invoice file.
5. Consigned stock supervisor (for posting to individual consigned stock inventory ledgers).
6. Tax department if required.

The procedure and principles applied in the processing of replenishment and non-replenishment sales reports differs from that of additions orders. The invoice rendered for replenishment or non-replenishment sales is a firm invoice and is issued immediately upon receipt of the consigned stock parts order and sales report. This invoice is issued for purposes of collection and a copy is used for posting to consigned stock ledgers. As stated previously, invoices for additions orders are issued as shipment is made and require only an entry to increase quantities in consigned stock. Here another of the features of the system becomes evident for, by shipping stock items to replace those reported sold, the normal process of preparing consignment invoices to increase stock amounts and the reduction of consigned stock amounts through the firm invoice have been eliminated. Only adjustment for valuation purposes is required at appropriate intervals, depending on price changes.

All orders—replenishment, non-replenishment, and additions—are prepared by the distributor. The multiple-purpose feature of the form represents, in itself, a labor saving device, not only in the preparation of a single report of sales and replenishment order by the distributor but also in the processing of pre-typed invoice masters in the invoicing department and the pre-typed parts orders in the parts department. Exhibit 2 shows the procedural relationships involved in the processing of the form.

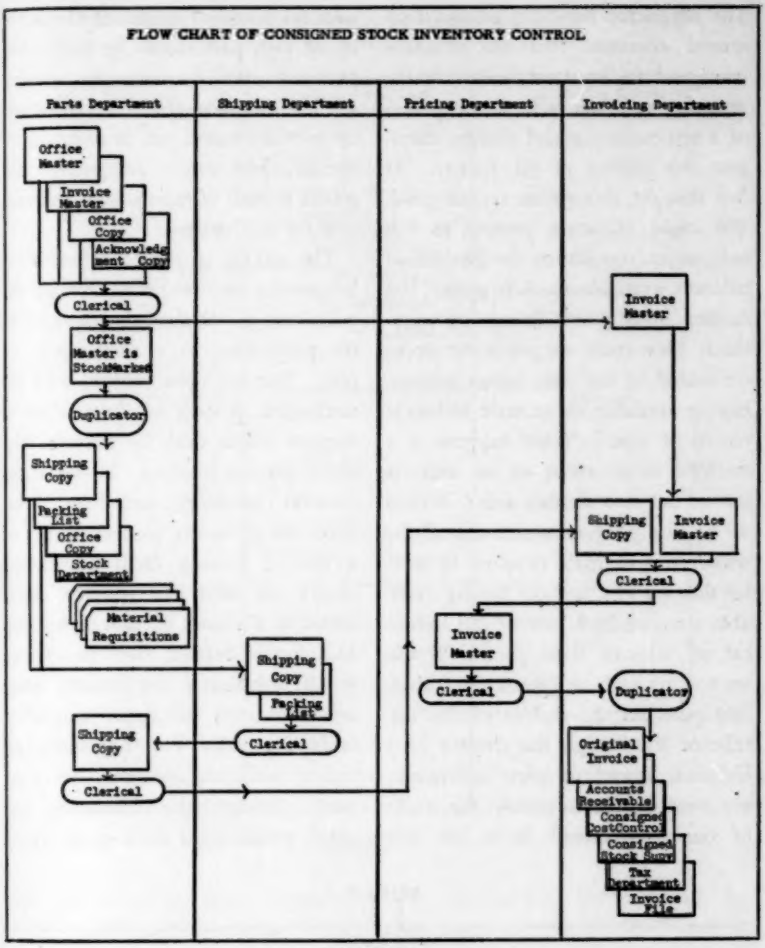


EXHIBIT 2

Inventory Activity Recorded on Tabulating Equipment

The efficient control of consigned inventories cannot be exercised without an accurate record of each transaction affecting the stocks. Proper inventory control makes the maintenance of an historical record of all movement desirable. Not only is an accurate record needed in the current analysis of stock but, at the time an inventory is taken and particularly at the time of reconciliation, the existence of historical records is important.

The suggestion has been advanced on several occasions that we maintain consigned stocks at established levels, replacing each sale with the shipment of a replenishment and thereby eliminate the posting of all activity. At first thought, this system sounds good. We could eliminate posting to our ledgers yet have known the established balances available in each stock. But further investigation brings up questions. How could we police the stocks controlled by our distributors without having available an accurate historical record of sales? What happens if a machine, once active in an area, is moved out into another area? Would we be in a position to recommend the withdrawal of parts required to service this machine without having available a record, both current and historical, of sales of these parts? Would we end up with an inventory of obsolete parts on the shelves of the distributor if, through the absence of a historical record of parts movement, we were unable to review the stocks of our distributors? It is felt that such an historical record of the activity of each part cannot be under emphasized. We do encourage day-by-day maintenance of consigned stocks by our distributors yet, in order to supervise these stocks adequately, historical records of sales should be available for this analysis.

The activity in the consigned stock ledgers has been recorded through the utilization of tabulating equipment in the preparation of a stock status report. This has been coupled with the mechanical posting of transactions to detailed ledger cards by use of a facsimile posting machine. Under a mechanical inventory recording procedure, the inventory records consist of a file of balance cards (tabulating cards) for each part number represented in the stock of each distributor. This file of balance cards maintained in the tabulating department, when associated with the detail transaction cards for sales and replenishments and/or additions to stock, are processed through the tabulating machine, producing a stock status report.

EXHIBIT 3

CONSIGNED PARTS STOCK STATUS REPORT

Distributor Code	Date	Part Number	Transaction Code	Receipts	Disbursements	Bal.	Usage to Date
4	12-18-56	5711A	N		2	21	46
4	12-20-56	5711A	A	4		25	46
4	12-17-56	5711A	R	2	2	25	48
4	12-17-56	5799	R	1	1	19	38

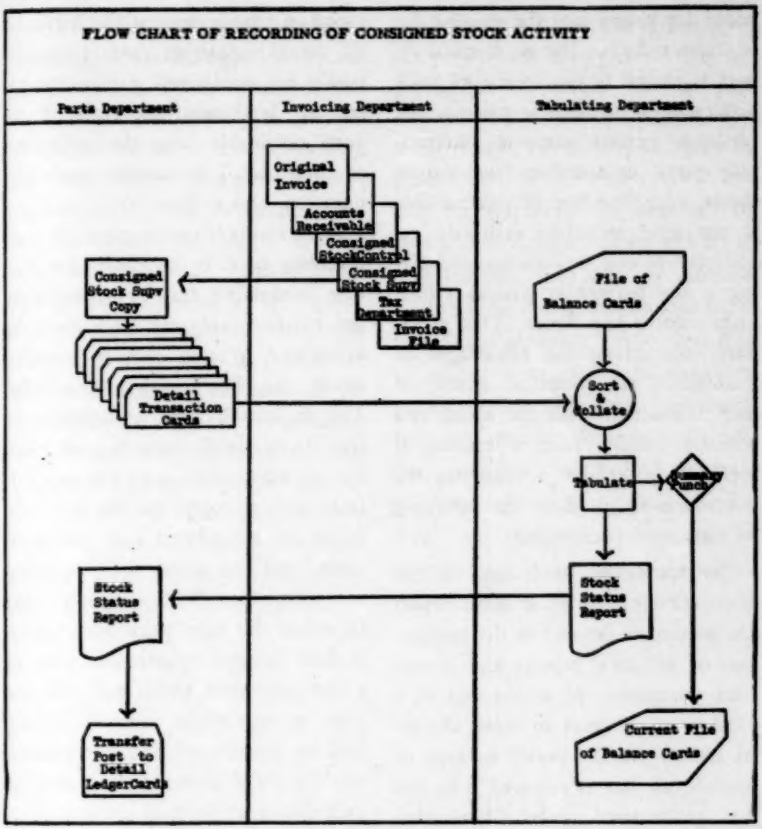


EXHIBIT 4

As invoices for sales, replenishments, and additions to stock are prepared, a copy of each invoice is routed to a key-punch operator who prepares a detail transaction (tabulating card) for each item on the invoice. These cards are delivered to the tabulating department and held pending the preparation of a bi-weekly Consigned Parts Stock Status Report (Exhibit 3).

In preparation for running the stock status report, all detail transaction cards are sorted by distributor code in part number sequence. Balance cards showing activity are merged into the file of detail transaction cards and, as the stock status report is prepared, new balance cards for part numbers having activity are summary punched. The new balance cards pre-

pared are sorted into the existing file of balance cards. The stock status report is routed to the consigned stock posting clerk for transfer posting. The facsimile posting machine automatically posts, or transfers from master sheets, an entire line of printed data at one time, recording each sale, replenishment and/or addition, and giving a new balance as well as a total units sold to-date figure. This procedure incorporates the advantages of maintaining an historical record of each transaction with the speed and accuracy ensuing from a mechanical application. Exhibit 4 illustrates the procedures involved in the recording of consigned stock activity.

The transaction cards used in the preparation of the stock status report are retained to be used in the preparation of statistical reports and annual sales summaries. If, at the end of a fiscal year, we want to know the total activity for the period by type of product, all that is required is to sort the accumulated detail transaction cards by part number and to prepare a tabulation of total activity for the period. If the parts manager is interested in the total value of sales of consigned stocks broken down by each distributor, we are in a position to give him this answer by merely sorting all detail transaction cards by distributor code and preparing a tabulation of total dollar value of sales by distributor. Let us assume that the sales department requires a monthly report of consignment sales. A run of all detail transaction cards processed within the month will give us this total. As is evident, the types of reports obtainable from the utilization of these detail transaction cards are numerous and various.

Maintaining balance cards for all inventory items by distributor has further advantages for, by reproducing the balance cards for each item by distributor, a work deck is provided which can be priced mechanically. This is accomplished by sorting the reproduced detail cards to part number sequence. The cards are then collated with a master pricing deck, the prices are reproduced into the detail cards, and the cards then extended in a calculator. The pricing deck may be either the sales price deck, which is then factored to estimated cost, or a cost price deck which will price the parts at our works cost. By sorting back to distributor code, a tabulation may be made showing the values of each consigned stock of parts. Adjustments as necessary can then be recorded in the inventory controls.

Same-Day Response to Distributor Order Often Achieved

We have operated our consigned stocks under this system for approximately six months and feel that the improvement over our former system is substantial. The planning and development of the system itself required a change in the thinking of

both accounting and parts department personnel. Once management realized the advantages of the system, it was necessary to move rapidly to incorporate all of the ideas and yet develop a practical system. The enthusiasm of the distributors was encouraging and their comments were helpful in arriving at the final drafts of the forms required. The adoption of the system required an education of all people using the form and an on-the-job educational program was initiated for personnel of our parts departments and our accounting departments. Distributors were mailed printed sets of instructions with illustrated exhibits explaining in detail the operation of the system and the preparation of the necessary reports.

Now that we have the system operating, we are happy with the improvement in service. In the past, shipments were made in five days after receipt of the stock replenishment order. We are now often in a position to process the necessary report and to have the shipment on its way the day the order is received. Customer service is important to us, as it is in any business, and we feel that, no matter how good such service is, there is always room for improvement. We are constantly striving to discover the possibilities of further improvement through mechanization. As new ideas and developments sprout, we want to be in a position to take advantage of them.

Many Items Make More Inventory

by GEORGE A. POWER

Supervisor of Stores Accounting, Apparatus and Optical Division, Eastman Kodak Co., Rochester, New York

An avenue of approach to inventory reduction is concisely explored by the present author who offers a plan under which the items in production and supplies inventories may be reduced in number. The backbone of the plan is a material listing to disclose not only duplications but also groups of materials closely related in kind as well as similar sizes, gauges, etc., of the material. It is suggested that the following out of this plan may well result in smoother operations as well as a smaller amount of money tied up in raw stock.

FOR MANY YEARS the major concern in the financial control of the raw materials and supplies inventory has been mostly with the matter of inventory turnover and the corporate funds invested. Today commonly practiced production control techniques have done much to provide this desired turnover control by resolving a production schedule into quantities of materials required by dates of planned commitment to production. Assuming no serious fluctuation in a production schedule, a company armed with this data can have as rapid an inventory turnover as it dares to risk and, therefore, can hold its inventory investment to an operational minimum.

Item Reduction — A Neglected Area

However, although a fast inventory turnover may thus be generally well accomplished, there is another important aspect of inventory control which has not been so well exploited. The factor which has been often overlooked or ignored is the number of unnecessary items being stocked and used. It is in this direction that the accountant can well afford to turn his attention if he desires to make further significant cost reductions in this area. The greater the reduction in types of items carried in inventory and consumed in the production process, the fewer will be the purchase requests, orders placed, receiving and trucking operations required, invoices processed and paid, stock cards maintained, feet of storage area needed, etc. This means fewer personnel in production staff, purchasing and accounting. Likewise, a reduction in the variety of items carried means higher consumption per item. Consequently, the price advantage of quantity purchasing can be realized and the risk of material obsolesence diminished.

In order to effect such a reduction in the types of items used in the product, there must first be a reduction in the kinds of items specified

for the manufacture of the product. At this point, the accountant must take the problem to the design engineers on whose doorstep the original sin as well as the corrective measure must be laid. While the engineers' primary concern is to design a product which can be manufactured and sold profitably, their efforts are often dissipated. A myriad of technical problems seem to leave little time to fully explore the cost aspects of each part as it fits into the model. To counter this tendency, cost and consumption information should be provided the engineers in such a way that it can be most quickly and easily used.

Some companies have furnished their engineering staff with a standard materials book. Rarely, if at all, does this book indicate the rate of consumption of the items declared standard. But herein lies the crux of the problem! Although he may have a fairly wide latitude in the choice of standard material to be used, the engineer, for lack of sufficient data regarding the overall plant usage of the various types of standard material, may well specify for a small part a material which is seldom used, if at all. The seeds of extravagance are thus sown. Then, when the prototype and designs are ready and the bill of materials written, the purchasing department may learn that the minimum quantity of this material which can be purchased from the supplier may well be several months in excess of lead-time requirements or, even worse, in excess of the model's expected life's consumption. Not only will the unit cost of the material be high but an obsolescence factor will be automatically put into the inventory. Had the engineer known the full story at the time his choice was made, he would most likely have specified a slightly different type of material already being purchased in volume for other models.

Services of a Special Listing of Materials

Enter the cost accountant—for he has at his disposal information which can be conveyed to the product designers and material specifications people in an easy-to-use form. This can be accomplished in two ways. One way is to show a consumption volume code in the material standards book and to mark each item acordingly and the other is to provide the engineer at regular intervals with a list of materials in use and their individual costs, rates of consumption, etc., for the overall plant.

While the material standards list would seemingly make an ideal place to consolidate all the information required by the design or product engineer in order to make a proper choice of material, the separate material usage report technique has two distinct advantages which might make it more practical. First, the material standards book is a detailed specification device which, perhaps, better lends

itself to the operation of large-scale concerns. Since the inventory cost reduction approach being described has application regardless of corporate size, concerns which have not adopted a standards material system can as effectively solve the problem by publishing a list of the more commonly used inventory items. Secondly, the standards material book is often a rather formal publication which would be quite difficult to revise regularly in order to furnish the current usage data on the continuous basis required to make the plan a success. This consideration may well sway even companies having the standard material plan toward the separate material usage report approach.

Application to Production Materials

The assumption, i.e., that the company to be studied either does not have a standard materials plan or prefers not to code its standard materials book as to usage, has been made here in order to illustrate the steps necessary to develop a material usage report which will prove highly instrumental in the effort to reduce to an effective minimum the kinds of material carried in inventory.

The initial step is to prepare an inventory listing, either manually or mechanically, in order to judiciously cull those inventory items the usage of which indicates that they should not be regarded as good prospects for a minimum number, high consumption list of materials to be recommended to the engineering staff for use in product design. It is important that the listing be in directory arrangement for quick selection and indicate, in addition to price and usage rate, as much description as is necessary to adequately distinguish the various types of material. For example, a typical flat-metal listing should be arranged first by thickness, then hardness, length, width, stock number, price and previous twelve months' consumption. The costs indicated should be the current market price for similar lot quantities, so that they will stand in proper relation to what could be expected in future purchasing. Although the quantity used for the past year is usually sufficient information, it might be better in some industries to show quantities currently required by the coming year's production schedule. A representative schedule of a segment of a steel inventory, run on a business machine, is offered in Exhibit 1 to better illustrate the approach.

As can be noted from the items shown, a multitude of materials, each only slightly different from the other, often accumulate in inventory when a well-defined plan to concentrate usage as much as possible to the types which have a large overall plant demand does not exist. It should be recognized at this point that there will always be instances in which an exact characteristic of a material is necessary in production and, therefore, that free sub-

SHEET, STRIP, COIL STEEL

Thickness	Temper	Width	Length	Stock No.	Cost Per Pound	Quantity On Hand	Previous 12 Months' Consumption
.0150	103	5-3/16	Coil	101412	.0960	659	5,766
.0150	105	26	50	101080	.0825	3,836	5,798
.0150	106	26	48	101014	.0890	116	89
.0200	101	26	48	100238	.0810	2,450	6,072
.0200	101	36	96	101323	.0775	3,106	626
.0250	106	26	48	101025	.0850	1,070	790
.0300	101	26	48	100980	.0775	3,638	6,396
.0300	101	36	48	101408	.0765	9,172	308
.0300	104	6-7/8	Coil	101419	.0860	3,859	488
.0300	104	3-1/4	Coil	101421	.0870	1,271	3,319
.0300	105	26	48	101023	.0775	5,576	47,120
.0300	105	60	144	101366	.0765	2,210	1,142
.0300	105	6-7/8	Coil	101399	.0860	880	4,393
.0300	105	36	48	101416	.0765	4,692	21,146

Note: Location should be shown if more than one exists.

EXHIBIT 1

stitution will not always be practical. However, assuming a certain degree of latitude in his requirements as is often the case, an engineer, provided with a listing of the type shown, might possibly not have specified a steel .0150 thick with a temper of 106 for a part which promised less than 100 pounds annual consumption, knowing that the plant was already consuming .0150 steel, 105 temper at a rate of over 5,000 pounds a year. Likewise, the engineering department perhaps would not have specified .0300 steel, 101 temper in sheets 36" x 48" for 300 pounds annual consumption if it had been known that the same steel in 26" x 48" sheets was being consumed at the rate of about 6,400 pounds per year.

Where small quantities are involved, it is often more economical to incur an additional annealing cost to change temper or to increase the scrap content in an operation by using slightly larger stock than to order small quantities of material exactly to specification. This possibility should be one of the factors considered before placing a small quantity order. The items in the exhibit are not in the least unrepresentative and one studying it for a few minutes can see a relatively large number of items which the design group might possibly have avoided in their specifications if they had been properly informed of the plants' material consumption. Add up the cost of all the unnecessary items in terms of unit purchasing price, purchasing, accounting and storage efforts, etc., and the cost reduction possibilities become quite astounding.

As the success of the program is realized, the list would gradually shorten until it included, principally, only items being used in large quantities throughout the plant. However, as accountants let us not overlook one very important fact. The ultimate de-

cision as to the type of material best suited for a particular part lies with the engineering group. A program such as the one suggested here cannot be forced upon anyone and still be effective. To accomplish the desired purpose, it must be sold to the product designers as a useful tool to assist their quest for a quality product which can be manufactured for the lowest possible cost. The cost advantage of quantity purchasing for a relatively few inventory items as against a hodgepodge of miscellaneous materials, must be thoroughly explained if the desired degree of cooperation is to be obtained. Then the data must be provided in the simplest form for quickest reference. Failing this, the plan will fall short of its real potential.

Application to Supplies Inventory

Inasmuch as the subject, as covered to this point, has dealt only with production material, perhaps the impression has been given that this is the only application of the proposed technique. This is far from being the case. A somewhat similar technique can be used to reduce the number and kinds of departmental supply items being purchased. Since the needs of a particular department for a supply item are so often left to the discretion of each department supervisor, a startling lack of uniformity in the items purchased invariably results. A listing of all materials in this category should be prepared in directory style and then, possibly, by general supply group, i. e., lubricants, abrasives, adhesives, and so on. The production manager, when furnished with this data, can, with the assistance of his staff, condense the list to the items he needs to use and declare these particular ones standard for the plant. Volume of consumption would, here again, be an important consideration, the principal object being to eliminate or combine those items of minor importance currently procured because of lack of knowledge of the consumption by the company as a whole.

As in the case of production materials, the supplies inventories can be honeycombed with duplications or near-duplications when an attempt is not being made to standardize inventories by type, location, etc. As an example in this area, let us consider for a moment, the adhesive tape portion of a manufacturing supplies inventory, represented by the information given in Exhibit 2. In this particular inventory, there are nine different sizes of tape, ranging in width only from $\frac{3}{8}$ inch to $1\frac{3}{4}$ inches. Many of these sizes, differing $\frac{1}{16}$ inch or so from the next, have had extremely low consumption rates. It would have been more economical to have ordered and stocked only sizes showing high rates of consumption. It would be extremely helpful if a central clearing point could be designated to screen all purchase requests to be certain that adequate consideration has been given to

MANUFACTURING SUPPLIES

Type	Size	Stock Number	Unit Measure	Unit Price	Location Vault Number	Units On Hand	Previous 12 Months' Consumption Units	Value of 12 Months Consumption
Adhesive	3/8 in.	030376	Roll	.2300	3	103	6	$ 1
Adhesive	1/2 in.	030647	Roll	.3000	3	613	516	155
Adhesive	3/4 in.	030364	Roll	.4500	3	176	178	80
Adhesive	1 in.	030379	Roll	.6000	3	469	1,210	726
Adhesive	1 1/8 in.	030367	Roll	.6800	3	199	30	20
Adhesive	1 3/16 in.	030568	Roll	.7100	3	175	14	10
Adhesive	1 1/4 in.	030365	Roll	.7500	3	184	56	42
Adhesive	1 1/2 in.	030591	Roll	.9000	3	70	1,110	999
Adhesive	1 3/4 in.	030363	Roll	1.0500	3	87	94	99
Adhesive	3 in.	030369	Roll	1.8000	3	57	26	47
Masking	1 in.	030641	Roll	2.6264	3	38	80	210
Rubber	3/4 in.	035132	Roll	.4123	3	24	73	30
Scotch	1/2 in.	035151	Roll	.9300	3	123	321	299
Scotch	3/4 in.	035130	Roll	1.3600	3	72	128	174

EXHIBIT 2

the approved item list, before buying a non-standard supply item.

The first listing made, arranged by type of supply, its location, etc., may likely divulge duplicate ordering, with its accompanying unnecessary duplication of storing. Illustrations of this point came to light recently during an analysis of a plant's various supplies inventories. It was found in one instance that screws, bolts, etc., of various sizes were being purchased and stocked by both the manufacturing and plant maintenance groups and that many duplications existed. To remedy this particular situation and to prevent a recurrence, it was decided that all nail, screw, and bolt purchases would be made, and such stocks maintained, by the manufacturing group. Any maintenance requirements of these items were to be supplied from the manufacturing supply inventory. Enough copies of the listing could be made quite simply to provide copies to the clearing point and the stores locations so that those concerned can determine quite easily what supplies are already available and where they are located.

Then too, such a supplies directory containing usage data would be of value to the cost group. Many supplies, although not consumed in significant value by the individual departments charged for them, may, in aggregate for the plant, represent a cost figure which will warrant a search for a less costly and possibly an even more satisfactory substitute. Also, the construction and maintenance people can use the supplies directory when planning and estimating the cost of capital and maintenance projects.

An Important Additional Way to Reduce Inventories

In summary, an area of cost reduc-

tion which has yet to be explored by many concerns is that connected with the reduction of the numerous types of items generally found in the various inventories throughout the plant. By carefully weighing the cost advantages of volume procurement, storage and handling, many minor specification preferences can be waived by the product design group as well as departmental supervision, thus permitting the use of types and kinds of materials and supplies already being purchased in large quantities for use elsewhere in the plant. The cost accountant has at his fingertips the necessary information to assist in this saving. He has only to furnish it to the proper people in a readily usable form and explain the economies to them.

A One-Card Timekeeping System

by BENJAMIN S. ABRAMS

Systems Designer, Electric Boat Division, General Dynamics Corporation, Groton, Conn.

Under the system proposed by this article, the employees take their cards with them to their departments after ringing in. There these cards serve to record job time, to provide attendance information on the spot, and to comprise a single source for labor cost and pay information. A new set of cards is provided daily by punched card methods.

MANY JOB SHOPS still use the traditional system of timekeeping, which requires two separate basic time records. Generally, one of these records is in the form of a weekly clock card, the other a daily job card or an individual job ticket. Clock cards are customarily kept in racks at the plant entrance until a timekeeper collects them at the end of the week. On the other hand, job cards or job tickets, whether they are written up by timekeepers or by supervisors, are collected by the timekeeping department daily.

It is only after the end of the week, therefore, that the timekeeping department learns of differences between job time totals and the totals of hours worked as computed from the weekly clock cards. This delay in uncovering the mistakes until pay day is imminent adds to the difficulties of reconciling these differences. Under this traditional system, supervisors are often not aware of all the latenesses of their people. Absences go unnoticed until late in the day and production may suffer a considerable setback. These things happen because the supervisors do not have ready and frequent access to the weekly clock cards.

These weaknesses of the traditional timekeeping system may be overcome by using a single, daily card as both the clock and the job card. This article describes such a one-card system suitable for large job shops where punched card systems are already in effect or where installations of the required equipment would be justified. Under this system, after ringing in his card on the clock at the plant entrance, each employee takes the card with him into his department. There the same card serves during the day as his job card. Because the cards are available to them in their departmental areas, supervisors are aided in their control of personnel. They can detect absences and latenesses sooner and can adjust work assignments more quickly to compensate for the missing employees. Timekeepers find it easier to reconcile differences between total job time and hours worked because they now do this daily. There is no longer

need to ask people to try to remember time data of previous days. The single-card system makes it practicable to produce timely reports of absences and analyses of the reasons for those absences from the same sources from which payrolls are prepared. Also, it helps to relieve congestion at the plant entrance by eliminating the necessity for putting cards back in the card rack at the clock area both at the beginning and ending of each shift.

Preparing the Time Cards

The foundation of the system is a master deck of tabulating cards maintained by the machine accounting department for timekeeping purposes. It is a prerequisite of the success of the system that the master deck be up to date at all times. If the flow of paperwork through the personnel department is rapid enough, copies of the applicable documents may be sent to the machine accounting department as the media for making the necessary changes to the deck. Otherwise, the timekeeping department should report changes daily as they occur. The reports should include information about new hires, severances, transfers, reclassifications, etc.

Each day the machine accounting department prepares two sets of time cards for the next day. This is done by reproducing the master deck on two sets of tabulating cards. One side of the card is designed as a clock card, the other as a job card. Key-punched and printed on the card are the employee's name, department number, clock number, and the shift and date for which the card is applicable. If a code for the type of labor is normally a part of the cost code, it also may be key-punched and printed on the card. The machine accounting department keeps one set of cards and gives the other to the timekeeping department. The retained set makes it possible to check later that every card given to the timekeeping department is returned as a completed job and time card. (This determination would be extremely difficult to make on the basis of the master deck because usually many changes would have been made to the master deck during the interval from the preparation of the two sets of time cards to the return of the completed set.)

Recording Attendance and Job Time

Before the start of the shift, timekeepers place the time cards in card racks near the time clocks at the plant entrance. Each employee, on arriving, removes his time card from the rack, clocks it in and takes the card with him to his work place. During the period when employees usually enter the plant, a timekeeper is available at the clock area. He has a supply of blank time cards. If an employee cannot find his card in the rack, he gets a blank card from the timekeeper, clocks it in, and gives it to the timekeeper. The timekeeper writes on the card the data

that would normally be prepunched and preprinted on it and returns the card to the employee. The timekeeper's presence in the clock area tends to prevent irregularities. On arrival at his work place, the employee gives the card to his supervisor or the timekeeper or he retains it, depending on whose responsibility it is to record job time. A desirable alternative is to require the employee to put the card in a specified pocket of a card rack in the departmental area. After the shift starts, the supervisor can tell by a quick-look at the rack whether any employees are late or absent.

As soon as possible after the scheduled starting time of the shift, but late enough so that it may be assumed that there will be few more, if any, late arrivals, the timekeeper checks the time card racks at the plant gates and removes all cards that remain. These normally would be the cards of absentees or of employees who failed to clock in on arrival. Occasionally there may remain in the rack absentees' cards erroneously clocked in by other employees who put the cards back in the rack after discovering the error.

The timekeepers give these leftover cards to the supervisors. This, too, tells the supervisors which employees are absent. The absentees' time cards are held by the supervisors until the end of the day. At that time, the supervisor deletes the starting time if the card was erroneously clocked in, writes the appropriate reason for absence code on each card, signs the card, and gives it to the timekeeper. In the case of employees who are present but who failed to clock in, the supervisor determines the employees' starting times, writes them in ink on the time cards, and signs the entries. These cards are then used for job time recording and clocking out in the usual manner. At many plants, a tardy employee's actual starting time can be verified by records of late arrivals maintained by guards at the plant entrance. At such plants, if the guards do not have a record of the employee's arrival, the supervisor may safely assume that the employee who is at work but failed to clock in, arrived on time.

During the day, the supervisor, the timekeeper, or the employee, whichever is responsible for the recording, writes the starting time and the job identification information for each job on the time card. If delays are accounted for separately, the time that one begins and the applicable cost code are written on the time card. Any additions to the prepunched and preprinted data or any corrections or deletions are indicated on the card. The reason for the lost time is written on any card which reflects lateness or incidental absent time (best shown as a numerical code). Near the end of the day, the supervisor enters the time the employee is to leave the plant on the job time side of the card and signs the card to indicate his approval of the recorded job information. He gives the

absentees' cards to the timekeeper and either distributes the other cards to the employees or, where a departmental card rack is provided, puts them in the rack where the employees may obtain them upon leaving for the day. After the employee gets his card, he goes to the exit, clocks out, and drops his card through a slot in a locked box. A timekeeper may be stationed at the clock area during the clocking out period if this is deemed to be desirable as a further deterrent to irregularities.

If floor checks are currently made to prevent fraud, their necessity might well be reconsidered in plants which use a single card system resembling the one here. General surveillance by timekeepers of the card clocking process, plus supervisors' certifications of job time, should provide sufficient internal check. However, in the interest of accurate cost determination, it is frequently advisable, particularly where job time recording is the responsibility of the employee or his supervisor, to make occasional spot checks of job information on time cards. The timekeeper does this by approaching an employee, determining what job he is working on at that instant, then inspecting his time card to assure that correct job identification data appears on the card, together with a starting time.

Readying the Cards for Machine Accounting

Shortly after the end of the shift, timekeepers remove the time cards from the locked boxes. Based on the clock recordings on the cards and taking into consideration the scheduled shift beginning and ending times and lunch periods and the reasons for absences or latenesses, the timekeepers compute and enter on the cards the straight-time hours and, if any, the premium hours to be paid. Job times are then computed from the recorded beginning times for the various jobs or delays. These job times are entered on the time cards and totaled. The total job time is then compared to the straight-time hours to be paid as shown on the other side of the card. The cards that reflect discrepancies in this respect and cards that are otherwise discrepant or incomplete are held aside for clarification or correction by the responsible supervisor the following day.

The cards for absentees and for employees who were late or who had other incidental lost time are separated from the others. Timekeepers then post the lost time to an individual lost time record maintained for every employee. The absentees' cards are kept in one group. The others, together with the cards of employees who worked at least the full shift, are put in groups of convenient size within the following classification:

1. Changed — This classification includes cards that are hand-written instead of key-punched and printed and cards that show additions to, deletions from, or corrections of the key-punched and printed data.

2. Unchanged — This classification comprises the rest of the cards.

To establish a control total of hours for the machine accounting department and to facilitate gang punching of the hours to be paid, the cards within each classification are sorted and grouped according to the number of hours clocked. Minor quantities of cards for miscellaneous numbers of hours worked are grouped together for individual key-punching. All mutilated cards are put in a separate group, as they must be completely reproduced. The cards in each group are counted. The product of the count and the hours per card of each homogenous group (with respect to hours) is the total number of hours in that group. The number of hours in each nonhomogenous group is determined by making two adding machine tapes that correspond.

A summary card is prepared for each group and placed on top of it. On this are written a serial number, identification of the type of cards in the group, the number of cards, the number of hours per card if the group is homogenous or the word "mixed" if nonhomogenous, and totals of hours worked and premium hours. A recapitulation is then made of all the groups for the shift or day. This recapitulation furnishes grand totals of the number of cards, hours worked and premium hours. The cards and the recapitulation are turned over to the machine accounting department.

The machine accounting department mechanically matches the cards returned by the timekeeping department with the duplicate deck which it produced and retained. A listing is made of the unmatched cards and given to timekeeping to trace. Any that cannot be found are replaced by cards handwritten by the timekeeper and signed by the supervisor. Assuming that the master deck has been kept up to date, the machine accounting department is now assured that it has a time card for every employee on the payroll. Preparation of the payroll, distribution of labor costs, and the preparation of reports of absences and other reports relative to payrolls and labor costs may then proceed in the normal manner.

An Improved Method

The entire procedure, so briefly described here, is helpful alike in the control of labor costs on the production floor, the preparation of accurate pay rolls, and the exercise of labor costing functions at other levels. It is an error-reducing and source-unifying procedure which is operated without serious difficulty and focuses attention on all features of labor accounting together.

Letters to the Editor

DIRECT COSTING — AND A FIXED BUDGET FOR FIXED COSTS

Editor, N.A.C.A. Bulletin:

IN THE MIDDLE of 1953 we had just installed our tabulating system. We knew we had to streamline our hybrid cost accounting methods and tie them in with some kind of budget system so that we could realize on the advantages of our equipment. Before jumping off the "deep end," we analyzed our particular situation and finally agreed that our yardstick should preferably have the following ten characteristics:

1. It had to be logical—We wanted a yardstick tailored to our own situation.
2. It had to be complete—Every center of responsibility in our manufacturing department and all plant activities had to be covered.
3. Our yardstick had to be realistic—It had to be based on a forecast of attainable sales and on current costs.
4. It had to be fair—Monthly budget allowances had to be based on actual plant activity (in our case, units produced) and reasonable allowance for all costs.
5. It had to be selective—All cost had to be covered for the company as a whole but, for each center, only those costs which were controllable, directly or indirectly, by that center.
6. Our yardstick had to be attainable—We saw no use in setting allowances so low that our supervisors would be continually behind the proverbial "eight ball". Frequent, or even regular, favorable variances seemed more desirable for long-range benefit than constant negative performance.
7. It had to be uncomplicated—We much preferred a few big guesses and a minimum of redistribution, as compared with endless small assumptions and fancy absorption methods. We wanted the budget to be concise and without frills, easy to develop and install, and easy to apply each month in consistent manner.
8. It had to be understandable—There had to be clear definition in plain terms of every type of expense, also a minimum number of items. We wanted a measure of known size, easy to recognize and easy to remember.
9. Our yardstick had to be acceptable—It had to be a tool which could be presented to, and accepted by, all plant supervisors as good for the company and good for them, and as a challenge to prove their worth as managers.
10. It had to be adjustable—This meant lending itself readily to annual revision or to adjustment for major changes in cost, such as in steel prices or labor rates.

To sum up, we wanted a budget which would lead to continuous and substantial savings in manufacturing cost and waste, at a minimum of wear and tear for "budgetors" and "budgetees." We had to find a budget technique which would give us these results. The main choice seemed to be between a fixed or a flexible budget. I looked in the dictionary and found that "'fixed" was described as "firm, rigid, unalterable." The first I liked, but the other two attributes seemed less desirable. The definition of "flexible" was more elaborate: "adaptable" (which sounded good), "convenient," "elastic," and "that which can be bent, twisted or warped without breaking." I worked my way through recent accounting literature. For the most part, it seemed to reflect a general conspiracy to kill off the fixed budget as old-fashioned and obsolete. However, it did draw my attention to a technique of newer vintage. It seemed to me, if used along with a fixed budget for period costs, it might well be the answer to our cost keeping problems. Our management agreed and two months later we started 1954 with a direct costing system and a fixed plant budget, with flex-

ible allowances for important items of direct cost.

We now have direct cost centers for production, material-handling and shipping. Here we measure just six types of variable expense against standard direct labor for product finished or against pounds handled. Next, we have constant plant cost centers which are charged, either directly or through reserve accounts, with so-called fixed overhead, including ordinary maintenance and all plant salaries. Constant plant cost is on a fixed monthly budget and charged to profit and loss each month as a period cost. Finally, we have general plant cost centers for central purchasing, central engineering and overall plant management. The combined cost of these centers is redistributed monthly to our three plants on the basis of manhours at each plant.

Our plant budget most definitely is not used to control manufacturing costs. It merely accounts for them. For control, we found it most effective to throw the daily and weekly spotlight on every time card going through our plants and on every item of supplies and expense incurred in each center. For example, our foremen in Syracuse receive each day, a complete machine listing of all job cards handed in by the men in their department for the previous day, showing direct labor by product, part and operation, by number of pieces made, by incentive rate, by hours and earnings, and by big "X" when rate is not made! Indirect labor is shown for each worker by nine different categories, ranging from the normal to the highly undesirable kind. Daily and weekly labor summaries for each center serve to keep an eagle eye on the ratio of indirect hours to hours of direct labor. As for direct labor, we compute variance for every item in our product lines.

It is this daily focusing and reporting on each and every time card and the monthly complete listing by center of each dollar of expense incurred, which we believe has made our supervisors cost-conscious as never before, and provides the kind of cost control at the source which hardly depends on a budget.

PAUL G. GIERS

SIX WAYS TO GROW

Editor, N.A.C.A. Bulletin:

THERE ARE INDICATIONS that the managements of some enterprises are dubious as to the value of services accountants perform. This is at least partly because we have not accepted the challenge of making ourselves rounded individuals, able to dynamically and imaginatively impart to others information it is our task to develop. I should like to propose a tool for this development comparable to the business budget used in industry, which I shall call a personal future budget. For a definition, we can paraphrase a description of its accounting counterpart and say, "A personal future budget is a coordinated plan of personal action for maximum achievement."

For development of this personal future budget, I have selected six "departments" or areas outside the technical field of accounting which I feel will most assist the accountant to gain in stature in our economy. They are:

Dept. A Attitude
Dept. P People
Dept. C Communications
Dept. RS Related Skills
Dept. O Organization
Dept. I Initiative

The importance of attitude in gaining an objective is generally conceded although few of us ever take time to appraise our attitudes. However, they are conveyed through our actions and it is only through dramatics that we convey an attitude apart from our real one. Even then, a careful observer

can detect whether or not our pose is genuine or assumed. Therefore, the sure way to convey favorable impressions to those about us is to develop a proper mental perspective. The standard for proper attitude should be to develop a positive, objective and cooperative state of mind. If our attitude is positive, we will take action when a problem confronts us. If it is objective, we will give a problem proper consideration. If it is cooperative, we will work with others, giving our unreserved effort to achieve a common goal.

We go now beyond attitudes to persons. In recent years, much has been written concerning the importance of human relations at all levels. It has been emphasized that misunderstanding causes disagreement between nations, labor and management, members of a family and individuals as such. Therefore, the standard for development in personal department P., having to do with people, is the ability to understand our associates both as individuals and as members of occupational groups. Understanding members of an occupational group involves analysis of those broad characteristics peculiar to people in similar jobs. We find that each type of employment requires certain background and aptitudes, and gives a certain economic status and job environment. The task of understanding a specific individual however, presents a more formidable challenge. Observe the individual, the language he uses, his reaction in certain situations, likes, dislikes, manner of dress, work habits, personal habits and general temperament. The understanding of people helps us to anticipate the type of report an executive appreciates, eliminate irritations that bother clerical help, and make just decisions regarding the actions of given individuals.

On par with proper attitude and the ability to understand and work with people is a third area of our personal budget—the department of communications. The standard in this department is to communicate effectively. This standard has several broad requirements, i.e., to develop an understanding of language in its common and technical uses and its aesthetic qualities and to develop facility in the several methods of communication: conversation, public speaking, letter writing, report and technical writing, and other media such as charts, graphs, pictures, etc. It also calls for selection of the best language and method in the particular situation. The attainment of the skill of effective communication requires patience and continued effort. We must take time daily to organize our thoughts and then give due consideration to their presentation.

The objective of Department RS—Related Skills—is to expand our areas of information and abilities to include fields of endeavor which are closely allied to the field of accounting. I believe, to paraphrase the adage, that the modern accountant must be a "jack of all trades *and* the master of one." Here is a short list of what I consider related skills:

1. Statistics
2. Mathematics
3. Economics
4. Finance
5. Law
6. Public relations
7. Personnel management
8. Labor relations
9. Investments
10. Salesmanship

The list could be lengthened substantially. We must continually strive to increase our horizons and search even further for any knowledge which will enable us to work more constructively with everyone in our organizations. The task is not as difficult as one might think. People like to talk about their jobs, not only in terms of working conditions, pay, etc., but in terms of what they do, how they do it, and why. To supplement this information, the habit of using reference and technical books frequently will help greatly. This does not require "long hours of study." Fifteen min-

utes here and there will have a real cumulative effect. The necessity for developing related skills is that it gives the accountant a better background for recording, interpreting and presenting accounting information; and for intelligently discussing the problem of all segments of his organization.

Then there is the indispensible sense of structure, i.e., organization. Business accomplishment today is measured in terms of teamwork. The function of Department O above is to improve knowledge of the team and the work it does. We may approach such understanding through an organizational chart which shows what is done, where, and who does it—the duties, jobs and responsibilities of our associates as well as our own. It never ceases to amaze me how little some accountants know about their own organizations. I have even found instances in which accountants were unaware of the source of original accounting data. Take a moment, lean back in your chair, and visualize your company's operations. Do you see merchandise being ordered? Who does it and how does he know what to order? How is it shipped to the company? What methods are used in the receiving department? Continue to ask yourself similar questions until you have covered all the functions of your organization. The chances are that you will ask yourself questions you cannot answer. Jot them down and make a point of learning the answers.

Initiative is the final area for consideration here but not the least in importance. It is needed in the solution of simple problems as well as the more complex ones. How often does an accountant work with a form—or a method or a whole procedure —which he feels can be improved, but does nothing about it. What about the accounting system viewed as a service function in its entirety? Who should see that it is brought up to date? I would be the first to admit that taking the initiative quite often leads to temporary frustration, but this should make the undertaking all the more a challenge. Further, we must use initiative to help others do their jobs better. Many times we withhold assistance from others because we feel the matter is none of our business. It *is* our business if we can be constructively helpful.

Accountants should grow in stature as individuals and their profession will gain in stature, too. As we take our rightful place with top management, more and more companies will benefit from the constructive work which we can provide, not only in recording the past but also in planning for a better future.

CLARENCE W. BROWN

Notes on Current Reading

Books

Management Accounting for Profit Control

I. Wayne Keller, McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y., 1957, 435 pp., $7.

Presented "both to students and to accountants of industrial and commercial companies," this work (the author of which is controller of a large industrial company and also a Past National President of N.A.C.A. and Past Chairman of its Research Committee) offers "an interrelated system of accounting, controlling and reporting," to use wording which appears in the preface. Readability is a feature of the text which develops the portions of its overall topic in considered sequence from the basics of organization and costing to the area of planning and decision. A thread of illustration runs through the entire book "based on a hypothetical company manufacturing fibreboard."

Accounting Trends and Techniques

Research Department, American Institute of Accountants, 270 Madison Ave., New York 16, N. Y., 10th Edition, 1956, 299 pp., $15.

That this compendium of financial statement practice is noted above as a 10th edition should be amended by the reminder that the work is an annual and each year's edition brings fresh data. Covered are reports for "fiscal years ending within the calendar year 1955" of 600 "survey companies" represented by quotations from reports and "nearly 700 additional reports (which) were informally reviewed and (are) referred to wherever appropriate, throughout the study." Inventory valuation practice is one of the areas of emphasis.

Specialized Accounting

Homer St. Clair Pace and Edward J. Koestler, Pace and Pace, 296 Broadway, New York, N. Y., 1957, 487 pp.

A revised text in the Pace series, this volume opens with a timely chapter on accounting for domestic and foreign branches and proceeds in subsequent chapters to department stores (including instalment sales), consignment, venture, construction, and receivables financing accounting, "estates and trusts," bankruptcy accounting, and institutional accounting, with two final chapters on municipal accounting. Each chapter opens with orientation in the characteristics of the field to which it relates.

Professional Ethics of Certified Public Accountants

John L. Carey, American Institute of Accountants, 270 Madison Ave., New York 16, N. Y., 1956, 233 pp., $4 (Paper-bound $3).

Strictly in the public accounting field but of interest throughout the broader accounting field in which there is a constant endeavor to maintain a type of independence which contributes to objectivity in discharge of accounting functions, this book by the Executive Director of the American Institute is a substantial revision of his much earlier work. There is a chapter devoted to "ethical responsibilities in management services" and one on "relations with clients."

Appraising the Economics of Electronic Computers

Frank Wallace, Controllership Foundation, Inc., 2 Park Ave., New York 16, N. Y., 106 pp., $4.

Both the body of this book and its appendices are relevant material to the student (an inclusive term today) of the potentials and applications of computers in the processing of business information. A team study is recommended and described. Installation problems and operating costs are likewise dealt with. The appendices are four in number and concern "How a Com-

SELECTED ARTICLES FROM ACCOUNTING PERIODICALS

THE ACCOUNTING REVIEW, *January*, 1957 (College of Commerce and Administration, c/o Carson Cox, Ohio State University, Columbus 10, Ohio, single copy $1.50)

Why Accounting? Dixon Fagerberg, Jr.

The Nature of Business Costs, General Concepts. Norton M. Bedford.

Capitalization of a Public Utility and the Measurement of Income. Harold Bierman, Jr.

Streamlining Auditing Techniques. Herman W. Bevis.

Auditing Electronic Records. Felix Kaufman & Leo A. Schmidt.

LIFO as a Spur to Inflation—the Recent Experience of Copper. Waino W. Suojanen.

Needed: More Informative and Understandable Financial Statements from Governmental Units. Delmer P. Hylton.

Reports to Top Management. James Don Edwards.

Qualifications for College Accounting Teachers. Harry R. Price.

Fixing "Fixed Assets". Frank A. Singer.

Observations of an American Cost Accountant Abroad. W. H. Wright.

CANADIAN CHARTERED ACCOUNTANT, *January*, 1957 (Chartered Accountants Bldg., 69 Bloor St. East, Toronto 5, Ontario, Canada, single copy $.50)

A Review of Electronic Data Processing Equipment. Leo J. Lacey.

THE FEDERAL ACCOUNTANT, *September*, 1956 (P. O. Box 53, Washington 4, D. C.)

The Accounting Organization of a Subsidized Steamship Company. John J. Creevy.

JOURNAL OF ACCOUNTANCY, *February*, 1957 (270 Madison Avenue, New York 16, N. Y., single copy $.75)

Presentation of Special Reports. John W. Queenan.

Organizing for Management Services. Louis A. Ryan.

Business Combinations. A.I.A. Research Department.

THE PRICE WATERHOUSE REVIEW, *December*, 1956 (Price Waterhouse & Co., 56 Pine St., New York 5, N. Y.)

Materials Handling. Herbert Bisen.

RETAIL CONTROL, *January*, 1957 (100 West 31st Street, New York 1, N. Y., single copy, $.75)

Management's Stake in Budgeting. Kenneth C. Tiffany.

THE WOMAN CPA, *December*, 1956 (342 Madison Avenue, New York 17, New York)

The Small Businessman and His Accountant. Mary F. Hall.

Modern Accounting Functions in Management. R. F. Anderson.

puter Works," "Application Examples," "Summary of Equipment" and "Operations Research." Initially, three possible benefits of computers "to an industrial company" are discerned as reduction in clerical cost, development of control information otherwise too expensive (or impracticable) to obtain, and introduction of operations research or like techniques.

A Primer to the Automatic Office

William Eastis, Automation Management, Inc., Westboro, Mass., 1956, 99 pp., $7.50.

Not primarily—or even secondarily—concerned with accounting, this historical re-

SELECTED ARTICLES FROM BUSINESS PERIODICALS

ADVANCED MANAGEMENT, *December*, 1956 (74 Fifth Avenue, New York 11, N. Y., single copy $.75 to members, $1.00 to nonmembers)

Organization Planning for Effective Management. William R. Willard.

Executive Responsibility for Automatic Data Processing Systems. Lowell H. Hattery.

MANAGEMENT METHODS, *November*, 1956 (22 West Putnam Avenue, Greenwich, Conn., single copy $.50)

Can You Afford the "Practical" Approach to Electronics? Rolla R. Ross.

MANAGEMENT METHODS, *December*, 1956

Inventory Management: Strategic, Tactical, Technical. Donald W. Moffett.

THE OFFICE, *December*, 1956 (232 Madison Avenue, New York 16, N. Y., single copy $.35)

A Piecework Payroll System That Saves $7300 a Year. Harry Edelson & Dorothy Duke.

OFFICE EXECUTIVE, *December*, 1956 (132 West Chelton Avenue, Philadelphia 44, Penna., single copy $.50)

Modern Internal Auditing. H. Ranson Taylor.

How to Develop a Job Evaluation Program. Claude G. Killingsworth.

OFFICE EXECUTICE, *January*, 1957

Automation: How to Assess Its Practical Value. Robert H. Allen.

Planning for Cost Reduction. Wesley B. Edger.

view, exposition, and advocacy of electronic equipment for office operations is of concern to all whose attention has been drawn to this equipment. The presentation is of the "simplification" school of exposition, with both diagrams and photographs for illustration but does not hold back from technical details. It is more descriptive of the equipment and its various "abilities" than of specific applications.

Manual of Office Reproduction

Irvin A. Herrmann, Office Publications Co., 232 Madison Ave., New York 16, N. Y., November 15, 1956, 210 pp., $3.25.

Containing both advertising and text in abundance, this compilation is arranged by type of product—twenty-two in all. They are carbon paper, substitutes for carbon paper, gelatin hectograph, fluid, stencil, relief, and offset duplicating, camera photography, contact photocopy, contact printing, facsimile master preparations, automatic typewriters, automatic data processing, communication, facsimile and punched card data transmission, impression, stamps, addressing methods, tabulating, signature, and other imprinting machines, and binding and finishing equipment.

Management of Foreign Manufacturing Subsidiaries

E. R. Barlow, Harvard Business School, Boston 63, Mass., 1956, 223 pp., $3.50.

Within the material of Chapter IV of this book—the interest of which to industrial accountants will be apparent from its title—is a subhead, "advantages and disadvantages of various types of control" which will remind readers of a set of problems attendant on decentralized domestic operations but which are even more difficult of solution in foreign ones. Control of accounting methods is specifically (if briefly) considered. There is some stress on Mexican operations in various portions of this study but its approach is, nevertheless, comprehensive.

For Your Information

A SCENE OF ACTION

IT WOULD BE POSSIBLE to conjure up several reasons why *Business Action in a Changing World*, edited by Henry C. Thole and Charles C. Gibbons (Public Administration Service, 1313 E. 60th St., Chicago 37, Illinois, 1956, 319 pp., $5.00) is worthwhile reading for accountants. One of these reasons may, possibly, be hard to take. There is almost no mention of the accounting function in the 27 papers of which the volume consists. Grouped under four broad-scale section headings "Changes Facing the Manager of Tomorrow", "Adjusting to Changing Conditions", "Management Action in Specific Areas", "The Guaranteed Annual Wage and Business Stabilization", the 23 contributions specify marketing, production and research management at various points but have little, if anything, to say about financial or cost management in a functional way. Nor does the appended bibliography, sectionalized in the same manner as the body of the book, offer any but cold comfort, for it is all but bare of implication that there is an accounting function.

One More Opportunity to Learn

The foregoing comments, however, intended as fact rather than opinion, may be considered to show bias only (if at all) through the avenue of praise, and not blame. They signify that the book presents an opportunity for the accounting reader to study management action (to use the wording of the title), as there presented, objectively and creatively with the thought in mind at all times, "What can the accountant do to facilitate matters?" Accountants know that they are in charge of an information system. Whether it is sufficiently comprehensive, selective, prompt, accurate, pertinent and communicative, they do not always know, or how to correct short-comings. They will not be particularly concerned about lack of mention in a book which can assist them to overcome other lacks.

And this brings these paragraphs to the further reasons why the contents of *Business Action in a Changing World* may interest readers of the *N.A.C.A. Bulletin* and why, hence, it is selected for the contents-type review introduced here from time to time. These other reasons are the varied backgrounds of the contributors (resembling in many respects the varied backgrounds of principals in company management who are colleagues of the accountant in his day-to-day discharge of his functions), the even more varied character of the business problems presented, and the descriptions of actions which may be appropriate to them. Here interest may focus strongly in terms of the questions, "Is this action on an adequately informed basis?" and "How might it be made so?"

Structure of the Presentation

As a start on the nature of the papers of which the book is composed, it may be appropriate to derive the keynote from the editors' five-page preface entitled "Survival and Growth of the Industrial Firm in a Dynamic Economy". It closes with several paragraphs under a subcaption, "Managing for Tomorrow", of which the following is next to last, and perhaps climatic:

> "Ordinarily when we refer to good management we mean doing today's jobs better: better selling today; better production efficiency today; better product development today. For most firms, doing today's jobs better is a great challenge and a source of profit. Managing for today is a great challenge, but there is even greater chal-

lenge in managing for tomorrow. This book is about managing for tomorrow. While the subject matter of the selections included in this volume may seem superficially to be quite traditional, their focus is on tomorrow; and that focus is the reason for bringing them together."

It may be supposed that, although the design on the cover of a book may be more intended to stimulate reading than to indicate contents, it should do the latter also and, if it does—as in this case—a description of the work may dwell a moment upon it. The reader of this book is faced with the words "Business Action" in red followed by "in a Changing World" in black, both above a black grid (with unidentified scales) across which a jagged red line plots an ascending curve. The symbolism, quite apparently, is one of growth—at least of expansion, which may be either hollow or solid growth. Here, perhaps, in the "challenge" reiterated in the quotation which has been given above and the reason why the "selections" have been brought together. In short, "action" and "change" embody motion and growth or expansion imply a particular type of change. The action, it seems, is the critical function so that sound growth will emerge. What, then, are the topics of the papers which are considered serviceable to this emergency? By divisions of the book and in abbreviated wording, they are:

I Changes facing the manager
1. Role of management
2. Tomorrow's manager
3. Industrial trends
4. Buildup of the business cycle
5. Atomic revolution
6. Automatic control
7. The changing market

II Adjustment to changes
8. Insuring growth
9. Obstacles to growth
10. Managerial manpower
11. Decisions for tomorrow
12. Security for private industry
13. Problems in prosperity
14. Small business and depression

III Action in specific areas
15. Research in industry
16. Product planning
17. Market leadership
18. Production principles
19. Flexible facilities
20. Measuring productivity
21. Stimulating productivity
22. Employees and productivity

IV G. A. W. and stabilization
23. Threat or promise
24. Stabilization as good management
25. Stabilization methods
26. Production and distribution
27. Pre-requisites for G.A.W.

The Changes in Store

It is impossible (and not desired) to put a book on three pages. It is possible and perhaps desirable, against the structural background already given, to sample the contributions to this book to help the reader judge where most he wishes to go further. In "The Changing Role of Management", Douglas M. McGregor gives three "threads" he considers to be "emerging as a pattern". He says: "the first—is the belief that willing collaboration of people is the only sound way to achieve the objectives of a free enterprise system. The second is the growing confidence in the abilities and potentialities of the ordinary man. The third is the emerging genuine self-confidence that includes a good measure of humility and a genuine social conscience". In "The Manager of Tomorrow", Peter F. Drucker comments that "the new technology" will require that "the entire business be seen, understood, and managed as an integrated process".

Five areas of change are discerned by Erwin H. Schell in "Basic Records and Their Challenge to Management" as changing "industrial obsolescence rates, influence of financial incentives, nature of executive authority, relations with the public, and (the) changing price of national security".

"Thinking Ahead: Breakup of the Business Cycle" contains the viewpoint of Summer H. Slichter that "the day may eventually come when the growth of production and employment will not be seriously interrupted by drops in either production or employment." The discussion by John J. Hopkins of "The Atomic Revolution" includes the point that "After the stimulus our scientists have given us, the next stage ahead is to resolve our engineering choices". John Diebold, in "Automatic Control: Today's Industrial Revolution" comments "we now think in terms of control systems, of networks of instruments and regulators. This approach exemplifies much of what is radically new about today's Industrial Revolution". The section of the book on changes facing management closes with "The Changing American Market" by Gilbert Burck and Sanford Parker who look to "a science of consumption".

Adjusting to the Changes

For "Insuring Company Growth Under Changing Conditions", the contribution of Curtis H. Gager presents, among other emphases, a ten-point outline for growth planning and for "stimulating creativeness among associates and subordinates". As "Obstacles to Growth", Keith Powers includes "the unprofitable item", the "lure of bigness" and "downstream management" (one of the facets of the latter is described as "using new job opportunities to find places for problem personnel"). J. Douglas Brown divides the "functions performed in modern mass production" into four major stages in attacking "the new problem—of adjusting our manpower resources to the pattern of demand required", in writing on "Meeting Requirements for Scientific, Engineering, and Managerial Manpower".

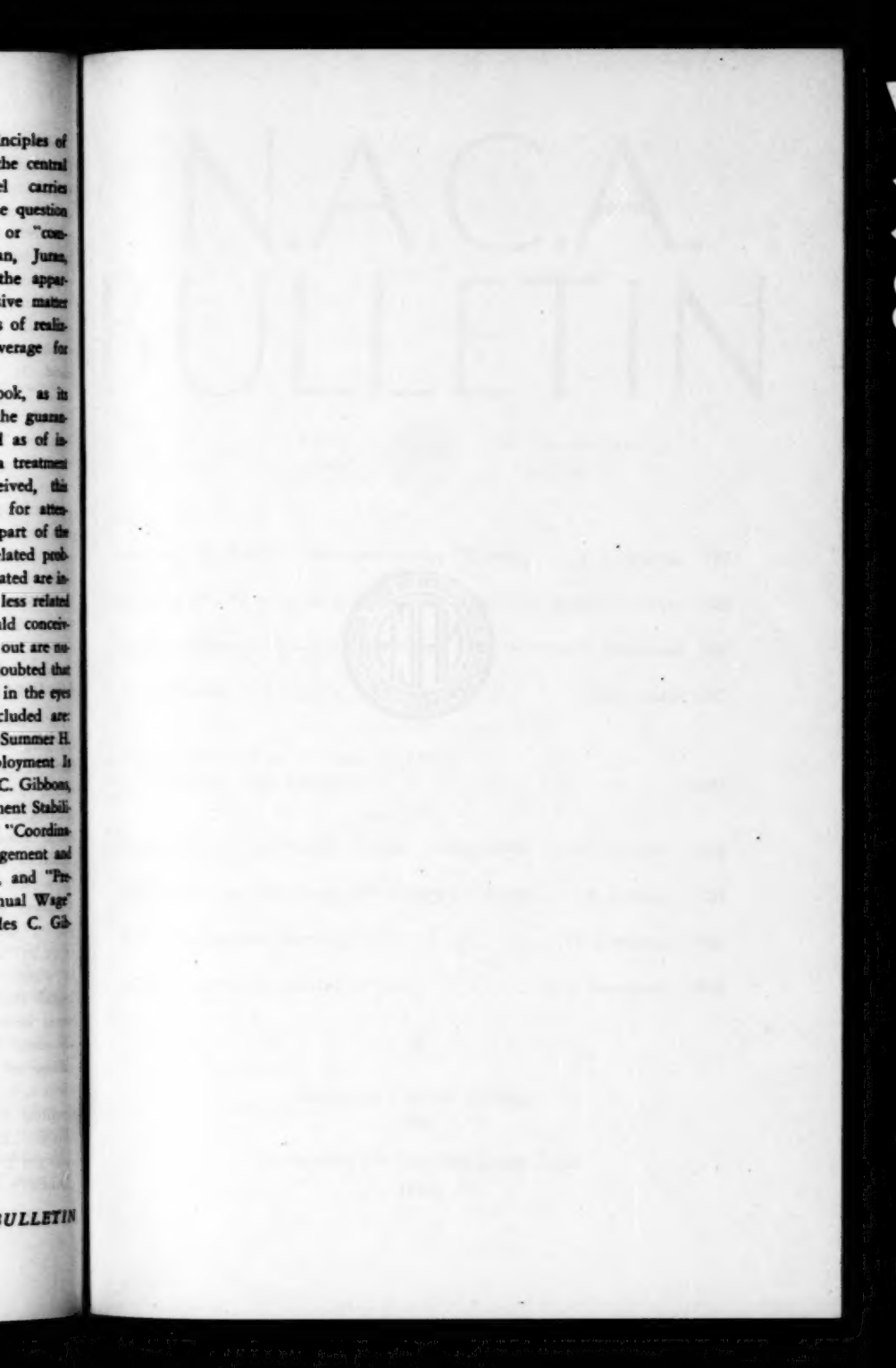
Drucker's second contribution, "Today's Decisions for Tomorrow's Results" describes finding "events that have already occurred, events that lie outside of economic conditions, but, in turn, shape those conditions, thus basing a decision for the future on events that have already happened". Protective measures in terms of positive actions for safety of individual enterprises are explained in "Long-Term Security for Private Industry" by Erwin H. Schell. This is followed by the paper by C. Canby Balderston entitled "Time to Fix the Roof is When the Sun is Shining", which notes problems embedded in prosperity, naming as typical "decisions . . . relating to capital additions, elimination of waste by efficient controls and by mechanization, and development of new products . . . (and) . . . decisions to acquire other firms through purchase or merger". Closing the section of the book on making adjustments to conditions is Robert V. Roosa's "Small Business and Depression". He says: "One of the outstanding difficulties of small business management revealed by this depression experience (of the 1930's) was the failure of the principals to impose upon themselves a rigid self-discipline during prosperity".

Action in Specific Areas

The third section of *Business Action in a Changing World* turns the attention from management functions to particular problems of management and the fourth and final section considers, in the several contributions which make it up, the broad but none the less specific problem of employment stabilization, with special reference to the guaranteed annual wage plan and its variants. These particular problems are certainly not less worth the interest of a reader—and possibly could merit more interest—but they multiply the already difficult problem of indicating here the nature of the contents of each section. It seems

appropriate to name and briefly characterize each, rather than to include a "garnish" of quotation from text.

There is a logic apparent in the succession of topics in the first three papers devoted to particular problems. They are "Industrial Research: Geniuses Now Welcome" by Francis Bello, "Product Planning" by Charles H. Kline, and "Conditions of Marketing Research" by Arthur P. Felton. We are largely back in production in the five which follow: "The Principles of Production" by Peter F. Drucker, "How Flexible Shall We Make Our Plant and Facilities?" by Robert P. Neuschel, "Measuring the Productivity of Capital" by Joel Dean, "Management Technique for Stimulating Productivity" by Joseph M. Juran, and "Employee Attitudes and Productivity" by Charles C. Gibbons.

Mr. Bello reviews the steadily magnifying interest in research by industrial companies, notes its nature, and notes also the growing competitive stimulus to it and the evaluation problems which result. Mr. Kline takes the company's existing product line as a point of departure for product planning, introduces tests which may be applied and suggests policy considerations in this area. Mr. Felton opens with a statement of "three essential conditions of marketing leadership", discerns ways to fail in the attempt, and considers at some length how marketing policies may recognize market facts. To Mr. Drucker, there is both old and new-style mass production which he associates with the principles of operations research. Balance is the central thought which Mr. Neuschel carries through his paper directed to the question of "specialized", "all-purpose" or "combination" plants. Messrs. Dean, Juran, and Gibbons, concerned with the apparently tangible but, in fact, elusive matter of productivity, deal with means of realizing the concept as useful leverage for more and improved production.

The introduction into the book, as its final section, of discussions of the guaranteed annual wage will be noted as of interest on the point of why, in a treatment of management broadly conceived, this problem is raised above others for attention. It may be thought of as part of the field of wage administration. Related problems that could have been so treated are incentives and profit sharing, and less related areas of management which could conceivably have been similarly singled out are numerous. However, it cannot be doubted that the topic has necessary standing in the eyes of the editors. The papers included are: "Labor's Threat or Promise" by Summer H. Slichter, "Stabilization of Employment Is Good Management" by Charles C. Gibbons, "Methods of Company Employment Stabilization" by Samuel L. Wilson, "Coordination Between Production Management and Distribution" by R. E. Burker, and "Prerequisites for a Guaranteed Annual Wage" by Henry C. Thole and Charles C. Gibbons.